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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—6TH YEAR. SYDNEY: SATURDAY, MARCH 22, 1919. No. 12.

THE TREATMENT OF URETHRAL STRICTURE BY EXCISION.

By **R. Hamilton Russell, F.R.C.S. (Eng.),**
Senior Surgeon to the Alfred Hospital, Melbourne.

In the *British Journal of Surgery*, Vol. II., No. 7, 1915, I published the description of a comparatively simple and efficient method of excising urethral stricture and restoring the continuity of the urethral channel by suturing. As I there pointed out, the treatment of urethral stricture by excision is not new; but I think that any method that can claim to be comparatively simple and efficient can claim also the merit of novelty. I say comparatively simple and efficient, for I must confess that, even by the adoption of my method, very considerable difficulty will sometimes be encountered.

My object in the present communication is to report progress in response to many requests for further information as to how my method is standing the test of time and increased experience; and some progress in knowledge there must surely be, seeing that my former paper was based upon an experience of only eight cases, including two contributed by my colleague, Lieutenant-Colonel Fay Maclure, Assistant Surgeon to the Alfred Hospital. Since that time my own experience has extended to 31 cases, exclusive of one or two military cases, of which I have not any recent knowledge and which are therefore of no value for my present purpose.

Of the 31 patients, one died a few days after operation from uræmia. I exclude from consideration nine who have been operated upon less than one year ago, and of the 21 remaining I have lost sight of six. This leaves fifteen cases of which I am able to give a full account, showing the results obtained. It will be seen that two were unsuccessful.

As I am a firm believer in the value of individual cases carefully studied, as opposed to tables of statistics, I shall give a brief account of each of these fifteen cases, but I would make one or two preliminary observations.

First, as to the selection of cases. This is a simple matter, for there is, in the ordinary sense, no selection of cases. Every case of stricture that is a very bad stricture, is regarded as suitable for excision and "very bad" means that I failed to introduce any instrument in a sitting of about fifteen minutes without an anæsthetic. (It is, I think, hardly necessary to state that I am not here alluding to cases of acute retention of urine, inflammatory or spasmodic stricture.) All of the "very bad" strictures that I have operated upon have been strictures of long standing that have usually been under treatment for a long period, that sometimes have been dealt with previously by operation and sometimes were complicated with fistulæ. Moreover, I have operated upon no case that has not been a very bad and long-standing stricture, and I have never hesitated to operate upon any that comes into this category. I am aware that it may be urged that in some of my cases an instrument of some sort might have been introduced during a prolonged sitting under an anæsthetic. This is true; but I am of opinion that if there is to be a prolonged sitting under an anæsthetic the time will be better employed in excising the stricture than in finding a way through it as a first step towards treatment by dilatation.

I regard a case as being completely cured if a full-sized bougie can be easily introduced after an interval of twelve months has elapsed since the last instrumentation. In a few of the cases in which this evidence is not directly available, I have given such evidence as I have been able to obtain from or about the patient, as in Cases VI. and VII.. The cases marked with an asterisk (*) are those published in my original paper.

*Case I.**—E.S., *æt.* 18, was admitted to the Alfred Hospital in September, 1911. He had suffered from trouble with micturition since he was eight years old. The possible cause was infection in childhood. Twice during the last two years he had been under treatment at the Alfred Hospital for complete retention, which on both occasions was very difficult to relieve. The stricture was excised on September 14 and the "hypospadias operation" performed. This was closed a year later, as there was no sign of return of the stricture and after this had been done, no instrument was introduced until twelve months had elapsed, when a full-sized bougie passed easily. (For note on "hypospadias operation" *vide infra.*)

*Case II.**—EB., *æt.* 48, was admitted to the Alfred Hospital in December, 1912. There was a recent extravasation, for which the perineum had been incised before admission to hospital. All water was passing through the perineal wound. There was present also a phlegmonous swelling (urinary infiltration) in the peri-vesical space to the right of the midline. The stricture was excised on December 31. The first instrument was passed 3½ months after the operation, when a full-sized bougie passed with ease.

I have not been able to trace this patient since the latter part of 1913, when I heard of his being quite well. The record, however, is incomplete.

*Case III.**—A.D., *æt.* 48, was admitted to the Alfred Hospital in June, 1913. He had had gonorrhœa 27 years before; a stricture had developed and had become troublesome for the last four years. On admission his urine passed *guttatim*; no instrument could be passed. Excision of the stricture was carried out in June, 1913. The first bougie was passed a month after the operation, when "Lister" No. 9-12 passed easily; the next instrument was passed three months later, when "Lister" No. 11-14 passed easily.

He was seen again on June 27, 1916. No instrument had been passed for over 2½ years. "Lister" No. 11-14 passed easily. The site of the stricture was not felt.

*Case IV.**—S.B., *æt.* 55, was admitted to the Alfred Hospital in October, 1913. He had had internal urethrotomy performed twelve years previously. For the last six years he had been treated every few weeks at the Alfred Hospital by dilatation. The stricture was refractory and difficult to treat. Excision was performed on October 28. The first instrument was passed at the end of January, when a full-sized bougie passed easily.

I then left Australia for some months. He was next seen in January, 1915, no instrument having been passed for twelve months. A full-sized bougie was passed easily.

Case V.—E.D., *æt.* 53 (accidentally omitted from earlier paper). The operation was performed in the Alfred Hospital on March 11, 1911. He was seen on March 9, 1916, no instrument having been passed for over three years. "Lister" No. 7-10 passed easily, and dilatation to 11-14 was at once carried out. Two months later No. 11-14 passed easily. He was seen again on May 12, 1917, a year having

passed since the last instrumentation. "Lister" No. 11-14 passed easily, without a hitch.

Case VI.—P.H., *æt.* 34, was operated upon in the Alfred Hospital on May 12, 1915. His brother answered my letter of inquiry as follows (October 27, 1918): "On behalf of my brother, P.H., who is now at the front, I am writing to let you know that the operation you performed on him has completely restored him to health. He has been a soldier now for a couple of years and has been wounded on two occasions."

Case VII.—WH., *æt.* 39, was operated upon in the Alfred Hospital on March 21, 1916. The patient answered my letter of inquiry as follows (November 3, 1918): "*Re* my operation, for which I am very thankful to you in giving me so much relief, I can honestly say that I have never felt any ill-effect since you operated on me and have never felt better for years as I do at the present time." This was written after more than two years had elapsed since I last saw him.

Case VIII.—A.S., *æt.* 56, underwent the operation in the Alfred Hospital on June 16, 1916. On August 7, 1918, no instrument having been passed for nine months. "Lister" No. 8-11 passed easily, followed by 10-13. He was advised to come again in twelve months.

Case IX.—H.D., *æt.* 43, was operated on in the Alfred Hospital on June 20, 1916. He was seen on April 12, 1918, more than six months having elapsed since the passage of any instrument. Now "Lister" No. 8-11 passes easily. He was seen again on October 18, 1918, six months having elapsed since the last instrumention. "Lister" No. 9-12 passed with a little difficulty. He was told to come again in six months' time.

Case X.—M.McI., *æt.* 48, was operated on in the Alfred Hospital on July 18, 1916. This case was complicated by urinary fistulæ into both the rectum and the perineum and a calculus impacted in the urethra behind the stricture. The patient was seen at my request on October 23, 1918. No instrument had been passed for over two years. Now "Lister" No. 11-14 can be passed without a hitch. His health has been perfect since the operation.

Case XI.—H.J., *æt.* 26, had the operation performed in the Alfred Hospital on June 7, 1917. He had had gonorrhœa at the age of 17. There had been difficult micturition for several years. An instrument was passed three weeks after the operation. He did not return until thirteen months had elapsed (August 11, 1918). It was then found that a full-sized instrument passed easily and the stream had been perfectly free since the operation. He actually came back, it transpired, through fear of gonorrhœal re-infection.

Case XII.—R.T., *æt.* 38, was operated on in the Alfred Hospital on November 12, 1917. This man had endured dreadful suffering for three or four years. The urine could only be squeezed through the stricture *guttatim*. The operation afforded complete relief, but no persuasion nor explanation could induce him to come back to see us. Instead, he was surly and quite thankless. This case is of psychological rather than of surgical interest.

Case XIII.—Case of traumatic stricture, in which all the urine had for two years been passed through a suprapubic opening. It therefore belongs strictly to a different category from the other cases that have been detailed.

This man, G.W., *æt.* 24, was seen in consultation with an experienced hospital surgeon, who had found the difficulties of treatment by the recognized methods insuperable (as had others before him). The patient's condition was very deplorable. On my suggesting that an attempt should be made on the lines I have advocated, my friend very kindly rejected my offer to assist him in the operation and preferred that I should take the case over.

Operation (March 11, 1917).—The perineal exposure of the apex of the prostate was carried out in the usual way. The suprapubic wound was then enlarged and a large, curved staff passed through the urethra from the bladder to the perineal wound. By this means the proximal portion of the urethra was recognized, isolated and sutured to the distal portion after suitable preparation. The preparation consisted in slitting up both portions of urethra, so as to lay the mucous surfaces wide open and refreshing the ends of the strips with scissors. A rubber catheter was then passed into the bladder from the perineum and the operation finshed in the usual way by suturing the diverging perineal incisions behind the catheter. The catheter was left in for 10 days, in order to allow the suprapubic wound to heal. On removing the catheter at the expiration of that period a most unexpected difficulty arose. It appeared that the patient was quite unable to empty the bladder, which became distended, causing great pain. An attempt to reintroduce the rubber catheter through the perineal wound failed and attempts with a metal instrument met with no better success. It was noted that the obstruction was not at the seat of the former stricture, but at the neck of the bladder. The suprapubic wound was reopened and relief obtained by that means. Under an anæsthetic a full-sized gum-elastic Coudé catheter was introduced through the entire length of the urethra and tied in for a few days; on withdrawing this instrument the same difficulty as before recurred. It was clear that the difficulty was brought about by spasm of the internal sphincter, with possibly some further impairment of the nervous mechanism of micturition, due to the function having been in abeyance over a long period. He was again anæsthetized and the neck of the bladder and prostatic urethra dilated from the perineum with a few Hegar's dilators and a glass irrigating nozzle (of about the thickness of a finger) tied into the bladder and retained for a week. This was completely successful; the perineal wound closed rapidly and he passed urine naturally and without difficulty thenceforth. He attended the hospital for three months after his discharge for the occasional passage of an instrument and then ceased to come. Fifteen months after the operation he was seen by my colleague, Major Brown, at the No. 11 Australian General Hospital doing some military work. He was perfectly well and a full-sized instrument passed without difficulty.

Unsuccessful Cases.

Of these there have been two.

I. (Case II. of my original paper, operated upon in December, 1912.)—On my return to Melbourne after ten months' absence in 1914 I found that stricture had again become troublesome in this man. He still requires dilatation at intervals of about two months.

II. (A man, *æt.* 52, operated on in February, 1915.)—In this case the man, who was a somewhat nervous and intolerant patient, never did quite well. The whole of the tissues of the perineum became the seat of dense, brawny swelling and a week after the operation he had somewhat severe hæmorrhage, which rendered it necessary to reopen the entire wound. I was not surprised that the result was imperfect. He still comes for dilatation about every two or eight months.

General Remarks.

I do not propose to describe again in this paper my method of operating in detail, for which I would refer any surgeon who desires to study it to my former paper (*loc. cit. supra*). I should also advise a surgeon who desires more complete information as to the technique of this operation to study the article on "Perineal Prostatectomy" by H. H. Young in Keen's "Surgery," to which I am myself largely indebted. I may be permitted, however, to transcribe a few short passages from the foreword to that paper, which will comprise the theoretical substratum of my method.

> The method of operation described in the following paper is based on a fact which, up to three or four years ago, was quite unknown to me and is to the best of my belief not generally recognized. The fact is that the male urethra may be slit up from the membranous portion to the meatus (with, of course, division of the scrotum in such a case), or to a less extent, with the assurance that no harm will result and that no difficulty will be experienced in restoring its integrity, provided efficient perineal drainage of the bladder is secured during healing. In ordinary single stricture of the bulbous urethra it is not necessary to invade the scrotum; an exposure of three or four inches of the channel, from the membranous urethra forwards, can be readily secured and this is usually sufficient.
>
> The urethra when slit up, is converted from a tube lined with mucous membrane into a "riband" covered with

mucous membrane; its restoration is to be left entirely to natural processes and will depend upon the obvious fact that a strip of mucous membrane flanked on either side by raw tissues which tend naturally to fall together and cohere, will, when this has taken place, be of necessity re-converted into a tube.

Finally, given a stricture at any point of the slit-up urethra, the damaged portion is exposed to plain view and can be readily excised, the two ends of the urethral "riband" being then brought together by catgut sutures, after which it is left to convert itself into a tube in the way I have described.

There is one other passage that I would transcribe from the body of the paper, because it deals with what I had been accustomed to describe as the "hypospadias operation," and it will assist in elucidating the nature of the method of excising a stricture. Curiously enough, I believed at the time that I was relegating the "hypospadias operation" to the limbo of past procedures; increased experience has, however, led to an alteration in my opinion and I now believe that the hypospadias operation will still have a sphere of usefulness in certain special cases, notably, in the presence of multiple fistulæ, with extensive brawny infiltration of the tissues of the perineum (sometimes spoken of as "watering-pot" stricture). The passage is as follows:—

I shall probably succeed best in making the whole matter clear by briefly stating the history of the operation and the manner in which I was led to its performance in the first instance. In the *Australian Medical Journal* of December 23, 1911, I published a suggestion for mitigating the sufferings of patients with very intractable stricture by an operation which laid open the perineal and scrotal portions of the urethra, thus simulating artificially the main features of perineo-scrotal hypospadias. The urethra was opened in the perineum and slit up from the bulb forwards as far as the root of the scrotum; the scrotum was also divided and the testes were each sewn up in a separate scrotal bag; the scrotal portion of the urethra was slit up as far as the root of the penis. The man had in future to pass water in the feminine manner.

I instanced two examples in which this plan had been carried out with very great benefit. One obvious shortcoming attaching to this operation is that it may be impossible to get behind the stricture should it be very far back in the bulb. Even in such a case, however, I was hopeful that experience might prove the operation to be worth doing, as it would enable the surgeon to deal directly with the stricture, with the advantage of direct vision, which is a very different matter from dealing with it *per urethram*.

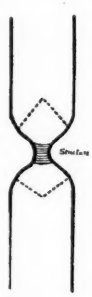
There is yet one more notable feature of the operation, which is this: if at any time it is desired to close the urethra and restore the channel to its normal state, to do this will be a very easy matter. Indeed, the operation arose, in the first instance, at a time when my thoughts were much directed to the subject of hypospadias and I had conceived the project of first converting the subject of a bad stricture into a case of hypospadias and then operating on him for that condition, making a new urethra independent of the stricture. My first patient, however, found such complete relief from the initial operation that he declined any further procedure for the repair of his urethra.

The Theory of Excision of Stricture.

It would appear at the first blush that the removal of a stricture and the substitution for it of an annular cicatrix, however accurately brought together by sutures, is a somewhat unsatisfying procedure in principle. We may at once dismiss any such doubts; there is no real similarity, either clinically or pathologically, between a stricture the result of gonorrhœal infection and an annular cicatrix the result of an accurately adjusted incision. The latter we know by experience gives no trouble worth speaking of in the case of the urethra. The gonorrhœal stricture, on the other hand, is intractable and irremediable, because it will have resulted, if severe, in the virtual abolition of a certain length of the *corpus spongiosum* and the conversion of its elastic resistant wall into dense fibrotic tissue.

The chosen seat of this worst type of stricture is the region of the bulb; we meet with strictures in more distal portions of the *corpus spongiosum* and we meet with lengths of urethra that are narrowed by fibrotic change; but in such cases as these the whole circumference of the *corpus spongiosum* is but rarely, if ever, affected, so that there is still material left that can be advantageously utilized by means of dilatation. But with very bad strictures of the bulbous portion, such as come to the operation table, it always seems to me that the whole circumference of the *corpus spongiosum* is destroyed for a distance of a few millimetres. The involved portion can be accurately seen and felt only by laying open the urethra freely, so that the limits of healthy mucous membrane abutting on the stricture, both in front of it and behind it, can be clearly noted.

Finally I wish to lay stress on an important point in the technique of excising the stricture. The whole thickness of the *corpus spongiosum* must be removed. To do this it should be dissected up from the sides and lifted fairly out of its bed, stricture and adjoining healthy portions together, before the excision is done. Then the stricture should be excised and the sound portions brought together. The sutures will then include, not merely the mucous membrane, but the entire thickness of the wall of the *corpus spongiosum*. I am of opinion that failure in at least one of my two unsuccessful cases (the second of the series) was due to non-recognition of the importance of this detail.



There is one further point, which is so obvious that to call attention to it would almost appear superfluous. In cutting the urethra across, both in front and behind the stricture, the incision should be curved or angulated, as indicated in the accompanying diagram, thus introducing an ordinary plastic device for widening the urethra at the line of suture. The dotted lines indicate the incisions.

Addendum.

While this article has been passing through the press one of the untraced patients of my series has presented himself. The report is as follows:—

W.K., *æt.* 55, was operated on in the Alfred Hospital on February 12, 1916. He had suffered from stricture for seventeen years prior to the operation. He avers that no instrument was passed on him at any time after the operation, either prior to leaving the hospital or after. (He explains that he returned to the hospital on one occasion, but failed to see me and did not go again.)

He was seen on March 5, 1919. He states that he has had no trouble whatever, but has been mentally apprehensive, lest he should be in trouble through neglecting to have an instrument passed. On examination, "Lister" bougies sizes 9-12 and 8-11 were arrested at the site of the old stricture; 7-10 passed easily through and dilatation was at once proceeded with up to 12-15.

This case is of somewhat special interest, owing to the accident of there never having been any instrumentation after the operation. I think we may regard him as being completely relieved of his stricture and I judge that no further dilatation will ever be needed.

THE NATURE OF THE RECENT AUSTRALIAN EPIDEMICS OF ACUTE ENCEPHALO-MYELITIS: Successful Conveyance of the Virus to Sheep, a Calf, and a Horse.

By **J. B. Cleland, M.D., Ch.M.,**
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and
Alfred W. Campbell, M.D., Ch.M.,
Sydney.

(From the Microbiological Laboratory, Department of Public Health, New South Wales.)

There seems little doubt that the cases of the "mysterious disease" recorded by Litchfield, Breinl, Burnell, Anderson, Mathewson and Latham and our fellow-workers and one of us in 1917 were all instances of one and the same disease. These cases were located in the western part of New South Wales, in Brisbane and Townsville in Queensland and along the Goulburn Valley in Victoria. During the late summer and autumn of 1918 further cases occurred in the western parts of New South Wales, some in localities not affected during 1917. It is a striking fact that observers who have made histological examinations of material from fatal cases, have been unanimous in describing the lesions as those of a polio-encephalomyelitis. The actual nature of the disease, however, apart from its histological designation, has not been satisfactorily settled. Breinl, basing his opinion upon two successful monkey experiments, sums up his investigations in Townsville as follows:—

> The conclusion is therefore justified that the cases of "mysterious disease" occurring in Queensland and New South Wales are caused by the same virus as acute poliomyelitis. The disease differs pathologically only in one respect from typical acute poliomyelitis, namely, in the extensive involvement of the brain; the peculiar clinical aspect seems to have, till now, eluded observation.

Our co-workers and one of us stated in our first communication on the subject that we thought the disease might be due to some virus allied to that of acute poliomyelitis (the Heine-Medin disease), producing a disease which had hitherto not been differentiated from the latter. At the time this was written we based our opinion on the following points:—

(1) The disease in question in New South Wales affected only a certain portion of the State with peculiar climatic conditions.

(2) Areas of the State as, for instance, the metropolitan district of Sydney in which small outbreaks of ordinary acute poliomyelitis (infantile paralysis) have occurred from time to time, were unaffected. As the population of the metropolis is greater than that of the rest of the State and as it is known by past experience that the climatic conditions there are not unfavourable for the development and spread of ordinary acute poliomyelitis, there seemed no valid reason why certain widely-sundered country districts should be affected and Sydney, in spite of ample opportunities for being seeded by the virus, should escape.

(3) The disease in the affected districts was unaccompanied by cases recognized by the general practitioner as instances of ordinary infantile paralysis. In fact, the notifications of infantile paralysis for the whole State were not greater than those met with in ordinary years in the absence of an epidemic of the disease. Had the disease under consideration been a form of ordinary acute poliomyelitis, a definite increase of typical cases of this disease would have been expected.

(4) Severe cases of the disease manifested clinically signs and symptoms remarkably like each other. These manifestations were those of cerebro-spinal irritation varying in individual cases, presumably according to the degree and sites of the pathological lesions in the central nervous system. Thus, cases that were considered mild examples of the disease in which the patients recovered, showed signs and symptoms such as could be explained by the occurrence of similar lesions similarly distributed but less intense than those in severe cases. Individual cases showed special developments, presumably depending upon the localization of lesions in particular areas; as an example, severe paralysis of the limbs, such as is met with in infantile paralysis, may be mentioned. Patients, however, manifesting unusual symptoms or signs, had passed through a clinical course like the others, to which these additional features were superadded.

For the above reasons we came to the conclusion, as a result of the study of the 1917 epidemic, that there were good grounds for considering the present disease as a distinct entity. Breinl (*loc. cit.*), in the heading to his paper, defines the "mysterious disease" as being "a clinically aberrant form of acute poliomyelitis." From this title it might be inferred that he considered that the disease was due to the ordinary virus of acute poliomyelitis, locating itself in unusual areas but still capable of producing ordinary cases of the disease. Or the interpretation might be put upon his statement that he considered the virus as a mutant breeding true, just as the virus of the recent mild epidemic of small-pox in New South Wales must be considered a mutant breeding true of the virus of ordinary small-pox. If the latter was the opinion intended to be conveyed, it seems to us it would have been more satisfactory to have stated the matter more clearly. At present the inference is that the virus of the recent epidemic is still capable of producing epidemic and sporadic cases of the ordinary type of infantile paralysis.

It may here be pointed out that cross-immunity experiments might throw light on the question as to whether the virus under discussion is a mutant of that of ordinary infantile paralysis or a distinct entity, because if it were a mutant one would expect an immune serum derived from the mutant to be protective against the virus of the ordinary disease, whereas, if they were distinct entities, one would not expect such a protection or at least a protection to anything like the same degree.

Investigations carried out during 1918 seem to us to give strong support to the contention that the disease is a hitherto unrecognized entity. The points to

which attention may be specially directed are the following:—

(1) We do not know of an epidemic of acute poliomyelitis in which signs of cerebral irritation have so strikingly dominated the clinical course, nor of one in which there has been such a high mortality rate (70%), nor of one in which such a large proportion of adults have fallen victims.

(2) Histological examinations of the brain and spinal cord from sixteen further human cases and from various experimentally infected animals, examined independently and conjointly by the two of us and by Dr. Bradley, have all shown lesions of a similar and, as regards distribution, distinct kind. The first and most important change is a thickening of the veins. The vein wall is surrounded by a collar or sheath or sleeve of cells which sometimes fills and distends the perivenous space. Affection of *venæ comites* may give rise to similar appearances in arteries. The vessels so affected may be found apparently in any part of the brain or spinal cord, though not necessarily in the same situation in all cases. Some vessels may be affected and others escape. In early cases most of these cells are indistinguishable from lymphocytes, though interspersed amongst them may be some cells of fixed connective tissue origin. Later the cells may show more protoplasm and an indented nucleus—a stage we believe towards organization. In addition to these perivenous sheaths there is intense congestion of all vessels and sometimes evidence of stasis.

These, in our opinion, constitute the essential lesions of the disease, but as secondary phenomena degenerations of nerve cells may occasionally be found, which we think are due to interference with their nutritive supply.

It is true that in many cases cellular islands may be found in the grey matter of the brain or spinal cord, but careful examination of these usually show very close association with a capillary vessel, so that we consider them merely as escapes from the capillaries and not as independent foci removed from the vascular supply.

These vascular sheaths are apparently similar to those met with in ordinary infantile paralysis so that they cannot be considered as pathognomonic of the disease under discussion. We also gather that the so-called tubercles of hydrophobia are similar accumulations of cells.

In our opinion this perivascular sheath or collar of cells is the outstanding feature of the Australian disease and the nerve cell degeneration is a secondary matter. We gather that in infantile paralysis certain authorities consider that a primary affection of nerve cells actually occurs.

We also think it very important that gross anterior-cornual-spinal lesions, practically areas of necrosis or softening, adequate to the production of limb paralysis, such as we are familiar with in "acute poliomyelitis," were found in but one of our sixteen human cases and never seen at all in our experimental series. In this connexion a recent paper by Webster, published in this journal, is of great interest. It deals with an epidemic in Melbourne of acute poliomyelitis, and both the lesions and the experimental results described differ widely from what we have observed. In particular not once did we see a spinal cord even approaching in appearance the spinal cord figured in this paper and not once did our animals offer paralysis as a dominant feature.

(3) The disease in monkeys, of which we have had twenty examples under observation, seems not to agree with that described in these animals when infected with the virus of ordinary infantile paralysis. Our monkeys showed as a first sign of the disease an anxious expression in at least half of the cases. This, accompanied by slight inco-ordination or excessive movements, was usually all that was noticed on the first day, though in six animals definite paresis of a limb occurred and one monkey was found prostrate. On the second or third day there were usually inco-ordinated movements during which the animal misjudged distances, over-balanced, and injured itself in various ways by dashing against the sides of the cage. On being much disturbed convulsive movements of the nature of a fit supervened in some animals. The inco-ordination progressed, attended by increasing weakness, until in the course of two or three days (occasionally longer) the animal lay prostrate on the bottom of the cage, unable to raise itself properly or to move except with the utmost inco-ordination.

Altogether nineteen of the twenty monkeys showed varying degrees of inco-ordination, and thirteen, including twelve of the nineteen, exaggerated muscular movements or convulsions. On the other hand, fourteen monkeys showed paresis or paralysis, consisting of slight paresis of a limb in three, marked paresis in five and apparent paralysis of a limb or other part in six. In two monkeys ptosis was marked and in another slight. Two showed squint. In no instance was the disease ushered in by definite paresis or paralysis of a limb or set of muscles alone and in no instance was paresis or paralysis the dominant clinical feature. Thus all our monkeys have shown clinical signs closely resembling each other and not of the type usually obtained as a result of the inoculation of the virus of ordinary acute poliomyelitis. In contradistinction to the disease in man, it may be mentioned that coma has not occurred in any of the inoculated monkeys.

(4) The virus of the Australian disease has been successfully and unmistakably conveyed to thirteen sheep, a calf and a yearling foal. The successful conveyance to these animals has been by means of a virus obtained from monkeys two or more removals from a human case. As establishing beyond doubt the conveyance of the disease to sheep, it may be mentioned that the virus was transmitted from two successfully-inoculated sheep back again to monkeys and from one of these latter, during a series of generations, to further sheep, a calf and a horse. Still further the disease has been conveyed from sheep to sheep. The symptoms manifested by these animals were in general similar to those in monkeys, save that unconsciousness might supervene in the case of the sheep and horse, as in man, before the fatal issue. A histological examination of the brains of these animals has shown the same pronounced perivenous cellular infiltration as was seen in human cases and in monkeys. In sheep the perivascular infiltration is in places extremely pronounced and presents a most striking picture. A very interesting feature in connexion with the inoculation

of sheep is that, if a series of animals be inoculated at the same time with the same material and under exactly the same conditions, some may develope the disease, some may show very slight symptoms, possibly indicative of a mild attack, and others may remain to all appearances unaffected. Therefore it seems clear that in the sheep, individual animals are immune to the disease even when the virus is actually introduced into the central nervous system. This relative insusceptibility of certain sheep is being investigated with the hope of obtaining ultimately a potent antiserum from an animal that has had a mild infection and has recovered. Whether such a serum can be tried for curative purposes in man will depend in part on the species of animal yielding it.

Yet another very important aspect of these results is that hitherto no one appears to have successfully and unmistakably conveyed the virus of ordinary acute poliomyelitis to any of the three animals mentioned above, in spite of efforts to achieve this end.

From this it may be inferred either that our successful results have been due to the use of a virus which is not that of ordinary acute poliomyelitis and can be conveyed to these other animals; or that we have happened to alight upon a strain of the virus of acute poliomyelitis which was conveyable to these other animals; or that whilst some individuals of these species are refractory, others succumb to the virus, the negative results of other investigators being due to their not having carried out a sufficient number of experiments.

We may add here that we have failed to convey the disease to dogs, a cat, rabbits and a hen.

As a result of all the points mentioned above, our own opinion is that the acute encephalo-myelitis under discussion is a distinct and hitherto unrecognized entity resembling ordinary infantile paralysis and at the same time histologically resembling hydrophobia. With the data now at our disposal we hold that this view should be maintained until weighty facts to the contrary are brought forward. We believe that harm results from bracketing together diseases which may or may not be due to the same ætiological cause until it is conclusively proved that they do own a common origin. When bracketed together the stimulus for research is lessened, whilst if kept separate the advocates of both sides are keen to discover further facts.

While assuming that the disease is an unrecognized one, we do not infer that it is a new disease. We suspect that the disease is ever-present in sporadic form, variously diagnosed and probably in pre-bacteriological days it has played havoc in epidemic form.

In conclusion we may mention that, after reading accounts of the recent (1918) epidemics of *encephalitis lethargica* in England, we are satisfied that this and the Australian disease, at any rate from the clinical standpoint, are widely different from one another. So far as we are aware, no experimental investigation of *encephalitis lethargica* has been published.

A full report of the New South Wales cases is now in course of preparation and will include the fullest details of over 120 animal experiments of various kinds, with the inferences that may be drawn therefrom. This is being published as an official departmental report.

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Reports of Cases.

A WANDERING BULLET.

By **H. C. Colville, M.B., B.S. (Melb.),**
Assistant Surgeon to Out-Patients, Alfred Hospital, Melbourne.

The following case, which occurred in ordinary civil practice, may, I think, fairly claim to rival in interest any similar case in the annals of military surgery concerning "freak" courses taken by bullets after entering the human body.

W.C., a youth, aged 16 years, was playing with a revolver (.32 calibre) on October 31, 1918, when it accidentally went off and shot him in the chest. The accident occurred in the country and the patient was immediately brought to Melbourne by motor-car. I was called to see him shortly before midnight—about three hours after the accident occurred. Beyond being a little shaken and nervous, the patient appeared quite well, the colour and pulse being normal. Examination showed a small, punctured wound of entry on the front of the chest, about 5 cm. below the clavicle and 3.75 cm. to the right of the right lateral border of the sternum. There were definite powder markings on the shirt and the skin and the clothing round about was soaked with blood in quantities suggesting that hæmorrhage had been rather severe. There was no wound of exit. Palpation round about the wound revealed definite tenderness high up in the right axilla, but no mass or induration could be detected. I concluded that the bullet had passed obliquely laterally and backwards through the *pectoralis* into the tissues of the axilla and proposed operation for its removal on the following day, the wound being temporarily dressed for the night.

The next day I decided that it would be wise before attempting operation to localize the bullet exactly by a skiagram and accordingly the patient was taken to the rooms of Colonel Stanley Argyle during the morning. To our surprise, a complete examination by both screening and skiagrams failed to reveal the bullet in the axilla, nor in any part of the arm, thorax or neck and we were reluctantly obliged to send the patient home and await developments.

Three days later Colonel Argyle suggested the possibility of the bullet having entered the circulatory system and been carried to some more distant part, possibly the abdomen or pelvis. Accordingly, on November 4 another X-ray examination was carried out, which showed that the abdomen and pelvis were also quite clear of any sign of the missile. At this stage the patient volunteered the information that he had noticed for the first time that day a slight feeling of "stiffness" in the left leg. He was once more placed before the screen and we were at once rewarded by the sight of the unmistakable shadow of the bullet lying deep in the tissues of the left thigh. Localizing skiagrams showed its position to be in the line of the profunda vessels, about 12.5 cm. below Poupart's ligament.

Major Hamilton Russell was asked to see the patient in consultation and operation was decided on. This was performed on November 8 by Major Russell, assisted by myself, the anæsthetic being administered by Dr. J. Rosenthal. The profunda vessels were exposed and the bullet was found firmly jammed in the lumen of the vein; it was removed without difficulty, the vein being divided between ligatures. The patient made an uneventful recovery. One can only surmise whether at the time of the accident the bullet entered the right side of the heart directly or whether it arrived there *viâ* the right axillary vein, as the tenderness over that vessel might suggest. Its subsequent course down the inferior *vena cava* and femoral vein must have been determined by gravity.

PAW PAW FRUIT FOR DIABETICS.

Dr. A. E. Mills (Sydney) writes:—

Some time ago a well-known Queensland practitioner consulted me. He had discovered the fact that he was suffering from glycosuria. He had observed that he could take paw paw freely without making any difference to the excretion of sugar in his urine, and indeed, provided he was careful of other starchy foods, he could partake of this fruit in considerable quantities and the urine would not show any sugar.

This suggested to me that it would be worth while to find out how much carbohydrate there was in paw paw. Accordingly I had the edible portion of the fruit examined at the University. The analysis was kindly made for me by Dr. Priestley and Mr. McQuiggin, of the Medical School. Their report is as follows:—

> The specimen submitted contained 90.1% of water. The total carbohydrate, estimated as glucose and fructose, equals 5.1% of the total weight. No starch or sucrose could be detected.

From this it can be seen that the paw paw may be classed among the 5% vegetables. There is this difference though, it is much more palatable. It will make a very acceptable addition to the dietary of the glycosuric.

Reviews.

THE STATICS OF THE PELVIC VISCERA.

An illuminating volume[1] on the means whereby the pelvic viscera are normally maintained in position, by one who is recognized to be an authority on the subject, has just come to hand and is worthy of the closest study by every anatomist and practical surgeon who undertakes the treatment of displacements and injuries of the pelvic floor and pelvic viscera.

The argument of Dr. Paramore's book—and it seems to the reviewer to be advanced with irresistible logic—is that the musculature of the pelvic floor is "a pressure bearing mechanism" by which the extrusion of the pelvic viscera is prevented. In other words, it is "a sphincteric mechanism, comparable in every way with the sphincteric arrangement of those muscle fibres of the thoracic diaphragm which embrace the œsophagus."

The "pelvic viscera are to be regarded collectively." This is in accord with Berry Hart's teaching of many years ago, whereby he showed that prolapse of the uterus is really a hernia of the entire displaceable portion of the pelvic contents.

"The viscera are incompressible and are subject to constant pressure, greatly varying in degree, from the down-thrust exercised by the musculatures of the thoracic diaphragm and abdominal wall." "It is not surprising that the mechanism occluding the pelvic outlet, which opposes descent, should be composed of the same sort of tissue as that which causes it." Simultaneous and harmonious activity may thus arise to prevent prolapse. Thus a sudden increase in intra-abdominal pressure, as in severe straining efforts, is met by an automatic and synchronous action of the *levator ani*, by which the down-thrust is diverted and the pelvic aperture closed.

The author is not the first writer to view the pelvic viscera collectively; besides Berry Hart's work, to which we have referred, Gaillard Thomas in his "Gynæcology" of twenty-five years ago referred to "the juxtaposition of other organs" as a powerful influence in maintaining equilibrium and preventing prolapse. Gaillard Thomas also referred to the uterus as "floating amidst the other organs"; the author says "the uterus, a floating organ." The term aptly expresses the normal condition and is frequently used in Australia for teaching purposes.

The value of "the perivascular sheaths and the thickenings in the bases of the broad ligaments" (Mackenrodt's ligaments) in preventing displacement is discounted by Dr. Paramore.

We regret space will not permit of our going more fully into the facts brought forward in this fascinating book. If they were assimilated by teachers of anatomy and operating surgeons we should meet with fewer dissatisfied patients.

[1] The Statics of the Female Pelvic Viscera, Volume I., by R. H. Paramore, M.D., F.R.C.S.; 1918. London: H. K. Lewis & Co., Ltd.; Demy 8vo., pp. 383, with 26 illustrations, including 23 plates. Price, 18s. net.

RÖNTGENOLOGY.

The United States Army X-ray Manual,[1] a book of handy size, was prepared by the members of the Röntgenological Department of the Army for the guidance of the physicians and manipulators on active service abroad and at the bases. Though containing little new matter, it is most complete and the work is explained in the simplest manner.

As is usual in American text-books on Röntgenology, the interrupterless type of apparatus is chiefly considered and the induction coil outfits are merely mentioned as being occasionally met with. A large part of the work is devoted to the care of apparatus and the methods of testing for and overcoming breakdowns.

Instantaneous work is reserved for gastro-intestinal work and is not recommended for ordinary radiography, on account of tube expense. It is recommended that tubes be tested on low stops, to give 5 milliampères at a 2-inch gap and when so adjusted the current is increased to 40 milliampères at a 5-inch gap and skiagrams taken with this current. A list of times of exposure at this milliampèrage is given and on testing these we have found them to give an exceedingly good series of skiagrams. The authors speak highly of the Eastman double-coated X-ray films and they incidentally warn workers against bending these films.

Dark room technique is gone into very fully and the need of the greatest care and cleanliness is insisted upon. A clever series of experiments to be personally conducted in the laboratory by the X-ray manipulator is described and it is pointed out that it is absolutely necessary to learn the handling of X-ray tubes by experience and not by listening to lectures.

The standard army apparatus and the radiator Coolidge tube is described in detail. It has proved a most efficient self-contained apparatus. The staff decided on set standard positions for the examination of joints, in order to obtain uniformity. The dangers to the operator and patient and the methods of protection occupy a special chapter and it is urged that no greater dosage than 60 milliampère-minutes be allowed at a 20-inch skin target distance.

As one would expect, a large part of the book is devoted to localization and only the simple double tube shift, parallax and triangulation methods are recommended. Greater accuracy than 0.5 cm. is unnecessary in the majority of cases and where greater accuracy is needed the Hirtz compass is to be used. Sweet's original method is the one adopted in eye cases. A very useful table is given, showing the average depths of various anatomical landmarks below the skin surface.

The remainder of the book deals with the technique of examination of the bones and joints, sinuses of the head, thoracic viscera, dental radiography, renal and alimentary systems.

A small section on therapy is included and it is firmly insisted that no X-ray manipulator, other than a medical man, should make therapeutic applications, owing to the grave dangers and attendant risks to the patients.

FRACTURES.

We can give the little paper-covered manual entitled "Gun-Shot Fractures"[2] quite unqualified praise. Dr. Blake's work in the American hospital in Paris with which he was associated is already famous, and the reader of this handbook will readily agree that the fame is deserved. The title "Gun-Shot Fractures" might put off some who expect to find all their future work confined to such fractures as occur in civil life. As a matter of fact, we think that no book on fractures that has yet appeared, whatever its number of chapters and of pages, can compete with the 127 pages of Dr. Blake's book. And it is as applicable and as helpful in connexion with civil fractures as in those produced by gun-shot wounds. In every line one perceives the work of a man who is no mere book compiler, but a thorough craftsman. It does not pretend to be encyclopædic; it leaves undescribed many methods that

[1] United States Army X-Ray Manual, authorized by the Surgeon-General of the Army, prepared under the direction of the Division of Röntgenology; 1918. New York: Paul B. Hoeber; Crown 8vo., pp. 506, 219 illustrations. Price, $4.

[2] Gun-Shot Fractures of the Extremities, by Joseph A. Blake; Collection Horizon: Précis de Médecine et de Chirurgie de Guerre; 1918. Paris: Masson et Cie; Demy 8vo., pp. 136. Price, 4 francs. (Published in English.)

are quite good and justifiably recommended by others. The author recommends what he knows and knows what he recommends. We would like to see this book in the hands of every country practitioner and of every hospital surgeon who may have to deal with fractures, whether simple or compound. He may not adopt every detail of the treatment suggested, but he would discover many useful ideas that might add to the comfort and welfare of his patients with fracture and improve also the ultimate result.

Public Health.

NEW SOUTH WALES.

The following notifications have been received by the Department of Public Health, New South Wales, during the week ending March 1, 1919:—

	Metropolitan Combined District.		Hunter River Combined District.		Rest of State.		Total.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	8	0	3	2	14	2	25	4
Scarlatina	4	0	3	0	21	1	28	1
Diphtheria	9	0	1	0	29	1	39	1
*Pul. Tuberculosis	18	8	3	0	2	0	23	8
P'monic Influenza	53	0	0	0	31	2	84	2

* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba Municipality.

VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending March 2, 1919:—

	Metropolitan.		Rest of State.		Total	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	5	2	8	0	13	2
Scarlatina	13	1	20	0	33	1
Diphtheria	43	0	42	4	85	4
Pulmonary Tuberculosis	17	16	6	2	23	18
Influenza	—	—	—	—	1584	77

QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending March 1, 1919:—

Diseases.	No. of Cases.
Enteric Fever	38
Scarlatina	6
Diphtheria	35
Pulmonary Tuberculosis	10
Cerebro-Spinal Meningitis	1
Poliomyelitis	5
Erysipelas	1
Pneumonia	14

SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the week ending February 26, 1919:—

	Adelaide.		Rest of State.		Total.	
	Cs.	Dths.	Cs.	Dths.	Cs.	Dths.
Enteric Fever	1	0	6	2	7	2
Scarlatina	1	0	18	0	19	0
Diphtheria	5	0	15	0	20	0
Pulmonary Tuberculosis	1	1	7	3	8	4
Morbilli	0	0	18	0	18	0
Pertussis	3	0	5	1	8	1
Pneumonic Influenza	0	1	0	0	0	1
Influenza Vera	0	0	1	0	1	0
Influenza	0	0	5	0	5	0
Suspicious Influenza	0	0	1	0	1	0

TASMANIA.

The following notifications have been received by the Department of Public Health, Tasmania, during the week ending February 22, 1919:—

Diseases.	Hobart. Cases.	Launceston. Cases.	Country. Cases.	Whole State. Cases.
Enteric Fever	1	1	0	2
Diphtheria	2	7	7	16
Pulmonary Tuberculosis	0	1	4	5

WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the week ending February 15, 1919:—

	Metropolitan. Cases.	Rest of State. Cases.	Totals. Cases.
Enteric Fever	11	4	15
Scarlatina	8	2	10
Diphtheria	14	2	16
Pulmonary Tuberculosis	5	5	10
Malaria	16	0	16

NEW ZEALAND.

The following notifications have been received by the Chief Health Officer, Department of Public Health, Hospitals and Charitable Aid, New Zealand, for the four weeks ending February 17, 1919:—

Diseases.	No. of Cases.
Scarlatina	81
Diphtheria	172
Enteric Fever	20
Pulmonary Tuberculosis	78
Poliomyelitis	1
Cerebro-Spinal Meningitis	6
Puerperal Fever	6
Erysipelas	6
Ophthalmia Neonatorum	2
Influenza	38
Hydatids	3
Morbilli	9
Trachoma	1

The following is the distribution of the influenza cases:—

	Week ending—			
	Jan. 27.	Feb. 3.	Feb. 10.	Feb. 27.
Auckland Health District	4	4	6	5
Wellington Health Dist.	1	1	5	4
Canterbury Health Dist.	0	3	3	2

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A meeting of the Senate of the University of Sydney was held on March 3, 1919, at University Chambers, Phillip Street, Sydney.

The date for the conferring of degrees was fixed for April 12, 1919.

The following letters were received: (1) Mr. H. H. Bourne, offering on behalf of his wife and self a collection of about sixty volumes on engineering science and higher mathematics, which belonged to his late son, Major C. E. Bourne, M.C., B.Sc., B.E.. (2) Mrs. Nolan, offering an annual prize of £5 in the Faculty of Law, in memory of her late husband, Lieutenant Morven Kelynack Nolan, B.A., Law III., to be called the "Morven Nolan Memorial Prize for Political Science." It was resolved that the offers be accepted with thanks and letters of appreciation sent.

The following appointments were made: (*a*) Matriculation Examination: Examiners in Latin, Mr. W. H. Nicholls, B.A., and the Rev. F. V. Pratt, M.A.. (*b*) Evening Lectures on the Theory of Education: Mr. T. T. Roberts, M.A., Mr. R. G. Cameron, B.A., Dr. P. R. Cole; Experimental Education, Dr. Phillips. (*c*) Philosophy: Evening Lecturer, Mr. A. H. Martin, B.A..

On the recommendation of the Public Exhibitions Committee a number of public exhibitions were awarded.

The Medical Journal of Australia.

SATURDAY, MARCH 22, 1919.

An Interesting Bacteriological Problem.

In the course of an ingenious research Dr. Robert Donaldson, the Bacteriological Specialist at the War Hospital at Reading on the bank of the River Thames, has demonstrated an important action of a saprophytic bacterium. The possibilities opened out by this research are wide and by fitting the data supplied in their correct place in relation to the information revealed by Metchnikoff and other bacteriologists, it appears to be possible to divine something concerning the rôle played respectively by parasitic, symbiotic and saprophytic micro-organisms in the animal body. Dr. Donaldson's attention was called to the fact that while many gun-shot wounds healed rapidly when the salt pack method was applied, occasional failures were noted. He found that the wounds that were healing satisfactorily emitted a foul, pungent odour, while in those instances in which the salt pack method apparently did not yield good results, this odour was absent. Investigation resulted in the discovery of the presence of a bacterium which possesses certain marked characteristics. This organism is anaerobic and acts as an organic catalyst, having the power to dissociate dead proteid material and to destroy certain bacterial toxins. It is quite harmless to human beings when introduced into wounds and is non-pathogenic to laboratory animals. Its proteolytic action was closely studied and it was found that the dissociation products of protein were innocuous. It is a spore-bearing organism and is resistant to heat, to drying and to the action of many antiseptics. While the bacillus proved to be a saprophyte, capable of living in wounds without inflicting any harm on its host, it was also found that it was incapable of associating symbiotically with pathogenic organisms, as some saprophytes appear to do. Thus this bacterium was able to disintegrate dead animal matter and to destroy many bacterial toxins, without giving rise to any poisonous products which might damage the patient. The "Reading" bacillus, as the organism was called, was therefore introduced artificially into gun-shot wounds for the purpose of removing sloughs and other dead and dying tissue, of disintegrating the dead bodies of other bacteria without exposing the body to the action of dangerous specific proteins and of ridding the wound and the body of the true toxins derived from organisms capable of forming them. The results were said to be excellent. The bacillus appears to be closely related to *Bacillus sporogenes* of Metchnikoff. Its power of cleaving protein is compared with that of trypsin. It has a distinct advantage over trypsin in the treatment of wounds, in that the bacillus by constant multiplication and renewed action is not exhausted by the accumulation of the products of hydrolysis, as is the case with the ferment. This method of dealing with foul wounds is therefore essentially different from that of applying antiseptics or irrigation. By means of a biological action, the pathogenic bacteria are prevented from harming the patient, while the same action effects a rapid cleansing of the wound.

The results of treating wounds with the Reading bacillus do not represent the most important part of the researches of Dr. Donaldson. The demonstration that this anaerobic saprophyte has the power of acting on diphtheria and tetanus toxin and reducing their toxicity to such an extent that 150 times the quantity is required to kill a guinea-pig may lead to a further practical application of the knowledge revealed by this research. But of still greater importance is the lesson these facts teach concerning the behaviour of the bacterium in human tissue. It will be remembered that Metchnikoff attached considerable importance to the capability of the lactic acid bacillus to overgrow less harmless intestinal organisms and crowd them out. Many attempts have been made to replace pathogenic organisms by organisms capable of living a saprophytic life in the human host. Years of searching have revealed that some saprophytes, which appear to serve a useful purpose in the organism, are endowed with the power to assume pathogenic properties under conditions yet little understood. In some cases the power to act harmfully is only possessed by a previously saprophytic bacterium when it enters into symbiotic relationship with other known pathogenic bacteria. In the majority of cases, however, we

have no knowledge why a bacterium inhabits a human body without doing any harm for a long time and suddenly appears as a cause of a pathogenic process. Pneumococci, diphtheria bacilli and meningococci may be found in the mouth and fauces of healthy persons. It has been demonstrated that these bacteria are capable of exercising their powers of producing disease. It would seem that the individuals are not always immune since an infection may occur in certain conditions. At times the infection is definitely determined by the advent of some other organism endowed with pathogenic properties. In other instances a fresh infection cannot be traced. This does not prove that a foreign organism has not been introduced into the body. Similarly the colon bacillus is ordinarily a useful inhabitant of the intestinal tract. It has still to be proved whether this organism by itself can lead to a pathological process, although many pathologists hold that this is the case in certain infection of the urinary and gall bladders. Dr. Donaldson's researches would therefore strengthen the doctrine that bacteria that invade the body may be saprophytic and useful to the host, or saprophytic and dangerous to the host when they enter into symbiosis with extraneous organisms, or pathogenic under certain conditions and saprophytic under others, or in the last place inevitably disease producing. He has certainly extended our knowledge of the class of organisms which are harmless and may be useful when the body is threatened with dangers from without.

THE PROPHYLAXIS OF VENEREAL DISEASE.

It is to the credit of Australia that the serious problem of venereal disease was faced at a time when other countries attempted to ignore the fact that these infections were undermining the fitness of the individual members of the community. The public was slow to awaken to the urgency of the menace, but as the facts were demonstrated with increasing insistence, the opposition to the introduction of rational measures to check the spread of the disease gradually dissipated. In Queensland legislation aiming at the control of those infected has been in existence for several years. This represents the first stage in the modern campaign, and even if it is now recognized that the original Act was defective in many particulars, it must be conceded that it was the means of breaking the ice. The measure introduced in Western Australia represents the first application of compulsory notification and compulsory treatment. Time has already revealed some shortcomings in the legislative provisions and a few of them have been remedied. Time will disclose others and we have no reason to doubt that experience will guide the Western Australian Parliament in moulding the prophylactic measures. The Commonwealth Parliament undertook the next step in the campaign by the appointment of a strong committee, whose reference included the investigation of the problems connected with venereal diseases and the task of recommending the most suitable remedies. This committee supported the plan adopted by the health authorities in Western Australia and further signified to the Federal Government that assistance should be given to the States for the purpose of enabling them to carry out these controlling acts throughout the length and breadth of the Commonwealth. Victoria, Tasmania and Queensland accepted the proffered assistance and introduced measures similar to that referred to above. More recently New South Wales has followed suit and thus five out of the six Australian States now possess laws for the compulsory notification of all venereal infections, for the insistence on treatment in every case, for the punishment of those who knowingly spread the infection and for the prohibition of treatment by quacks and unqualified persons. South Australia alone still resists the acceptance of what the majority regard as the most promising and most rational means for limiting the ravages of these widespread and extremely serious diseases. The movement is in its infancy. Strong criticism concerning the manner in which the Acts are administered are consequently more likely to do harm by embarrassing those in charge than to do good by indicating the defects that might be and should be avoided. It is, however, in the interests of the community to point out that undue delay was experienced in Victoria in the provision of facilities for adequate treatment and that in Tasmania the enforcement of many of the clauses appears to have been delayed, no doubt owing to unavoidable difficulties connected with the Health Department. It is to be hoped that efforts will not be spared in the strict application of each measure of control included in the several Acts and

that the necessary machinery will be provided without loss of time.

The termination of hostilities has rendered a strenuous effort to check the spread of venereal infection even more urgent than it was before. At the Sanitary Conference of the Allied Powers, held in Paris in March, 1918, Lieutenant-Colonel A. Graham Butler, D.S.O., presented a report on the preventive measures adopted in the Australian Imperial Force in connexion with venereal infections. The policy followed included an educational campaign by means of lectures and warnings to individual men. The second step was the advocacy of direct prophylactic measures; the third was the introduction of abortive treatment in the early stages of infection; the fourth and last was the institution of special hospitals for the treatment of all infections that had passed the earliest stages.

The prophylactic measures attracted much attention, but for obvious reasons it was found to be easier to ascertain the effects of abortive treatment than the result of actual preventive measures. Prophylactic outfits were offered to men free of charge and at the same time the medical officer warned them of the risk of infection. A card of advice was given and the men were instructed to attend for early treatment in the event of an infection. During a period of six months from November, 1917, to April, 1918, approximately 100,000 men reported for prophylactic treatment at the various depôts in the United Kingdom, while 75,000 outfits were issued and 50,000 condoms were sold. At the Early Treatment Centre in London between August, 1916, and March, 1918, 103,000 men reported for prophylactic treatment, 42,000 outfits were issued and 13,000 condoms were sold. It appears that the majority of infections were acquired in London, and consequently the need for prophylaxis was greater in the metropolis than elsewhere in the United Kingdom. We have some indication of the value of the precautionary measures in the incidence of the infections. The average number of men in hospital on account of venereal disease at the beginning of 1917 was about 37 per 1,000 men in the Australian Imperial Force depôts in the United Kingdom. The measures adopted reduced this incidence to approximately 12.8 per 1,000 after 15 months. It must, however, not be assumed that precautionary measures alone effected this reduction. It was found that over 90% of the men applying for treatment of gonorrhœa within six hours of the appearance of the first signs were cured within a week, while the abortive or early treatment was still successful in 71.3% when treatment was delayed for 24 hours or longer. It is recognized that measures which are essential in the Army, may be inadvisable or even useless in civil life, where discipline and effective control are absent. On the other hand, there are many who hold the opinion that prophylactic measures offering a large chance of success should not be ignored in the campaign aiming at the elimination of a serious disease. The medical profession would not be doing its duty were it to attempt to suppress these facts. Whether the evidence in favour of prophylaxis of venereal disease is strong enough to justify its application in civil life must depend on the data that can be supplied by the Australian Army Medical Corps officers at a later date.

THE TREATMENT OF AMŒBIC DYSENTERY.

The high incidence of dysentery in soldiers serving in the Eastern Mediterranean, Egypt, Palestine and Mesopotamia and the not infrequent appearance of infections in France have rendered it necessary for those responsible for the health of the British troops to set on foot extensive investigations concerning the forms of infection and the best means of combating the disease. We have already dealt on several occasions with the work undertaken under the auspices of the Medical Research Committee of the British National Health Insurance by Mr. Clifford Dobell, F.R.S., Dr. Dale, F.R.S., and Dr. J. B. Stephens. In a special report[1] Mr. Clifford Dobell, Dr. H. S. Gettings, Miss Margaret W. Jepps and Dr. J. B. Stephens have communicated the results of an exhaustive investigation of the bacteriological and protozoological nature of infections in 1,300 soldiers convalescent from dysentery and have recommended a line of treatment for infections with *Entamœba histolytica*. These recommendations have been repeated and amplified in a report drawn up by Mr. Clifford Dobel and Dr. H. H. Dale, as members of the War Office Committee on Dysentery.[2] It appears that the stools of the 1,300 patients in the Manor War Hospital were examined systematically for lactose non-fermenting organisms and although members of this group were found in 12.8%, not one yielded typical dysentery bacilli of the Flexner Y or Shiga variety. In four instances bacteria giving the same sugar reactions as the Shiga bacillus were isolated, but these bacilli were not agglutinated by a test serum. Similarly, six cultures of bacilli were obtained, which yielded acid, but not gas, on glucose

[1] A Study of 1,300 Convalescent Cases of Dysentery from Home Hospitals, with Special Reference to the Incidence and Treatment of Amœbic Dysentery Carriers; Special Report Series, No. 15; 1918. Medical Research Committee, National Health Insurance.

[2] Report of the War Office Committee on Dysentery, September, 1918.

and mannite, but these were distinguished from the Flexner Y bacillus by the biological tests and by other characters. In no case was either *Bacillus typhosus* or *Bacillus paratyphosus* found. It must be pointed out that the 1,300 men were convalescents and that in many instances the infection had been efficiently dealt with elsewhere.

The protozoological examination revealed 153 carriers of *Entamœba histolytica*, cysts alone being found in the fæces, while amœbæ were discovered in the fæces of three others. The infection was sub-acute in two and acute in one. Enquiry elicited the fact that while only 8.37% of the men invalided from the French front were infected with amœbic dysentery, between 18% and 19% of the men from Egypt and Salonica were infected, between 20% and 24% of the men from Gallipoli and Mesopotamia, 40% of the men from the Mediterranean, 66% of the men from India and 100% of the men from China were infected. Evidence is adduced to prove that the majority of the infections among the troops on the French front had been acquired either in France or in England. Some valuable information is given concerning the associated intestinal infections. The most common of these were *Entamœba coli, Entamœba nana* and *Lamblia intestinalis.*

Early in the war it was thought that the question of the treatment of dysentery was a simple matter. Since emetine had been proved to be practically specific in amœbic dysentery and since good results had been obtained with the specific sera in infections due to Flexner's or Shiga's dysentery bacilli, it was freely held that differential diagnosis was not absolutely necessary before the treatment could be applied. If a case did not clear up under emetine, one or other serum could be tried. Apart from the unsatisfactory basis of such a haphazard method of dealing with an infection, this therapeutic trial involved an unnecessary delay in recovery, a very important fact in a military community during warfare. The most serious objection, however, to the indiscriminate employment of emetine is that the drug is highly toxic to man and should only be employed when its benefit can be practically assured. If the drug is given in unsuitable form, in doses larger than necessary or over a prolonged period, it may lead to severe intestinal irritation, to cardiac weakness and even to dangerous collapse. Since the soluble salts of emetine give rise to severe vomiting and at times intractable diarrhœa, numerous observations have been made to ascertain which of the insoluble salts yields the best therapeutic results. The choice has fallen on the double iodide of bismuth and emetine. In the therapeutic experiments undertaken by Mr. Clifford Dobell, Miss Margaret Jepps and Dr. J. B. Stephens a cure was assumed when the search for cysts or amœbæ proved fruitless on six or more separate occasions, the first being made during the week following the completion of the treatment and the last not less than twenty-one days after the completion. In many cases seven, eight or nine examinations were carried out, while occasionally as many as 14 or 15 were made. The research revealed that stearin-coated pills of emetine bismuth iodide with a resin or soap basis were unsuitable. Better results were obtained with salol-coated pills and in a series of 59 cases treated with these pills cure was effected in 72.8%. The best results were obtained with small capsules of gelatine, each containing 0.06 grm. of the double salt. A cure resulted in 90% of the patients. Less good results were obtained when large gelatine capsules were used. It is suggested that the hard gelatine used for the large capsules was less soluble than that used for the small capsules. It is also possible that the drug itself may have varied in physiological activity. In all cases a daily dose of 0.18 grm. was given for twelve days, so that the total quantity given in the course was 2.16 grm.. It was found that 34 patients of the 155 treated with emetine-bismuth iodide were not cured with one course. Seven of these patients had received small gelatine capsules and nine large gelatine capsules. In the subsequent treatment 23 patients were given larger quantities of the drug in the second or third course. Of these, 14 were cured, while nine remained uncured. The frequency of cure following an ineffectual course with insufficient doses or unsuitable preparations of emetine would seem to dispose of the suggestion that the exhibition of emetine renders the surviving amœbæ resistant to the emetine. On the other hand, there is sufficient evidence to show that in about 5% of all cases emetine fails to effect a cure, no matter how employed. In these cases it is recommended to give the Mexican drug, *Chaparro amargosa,* in the form of an infusion. The infusion is prescribed in 3.5 grm. doses in 250 c.cm. of water, drunk three times a day, while two enemata of the same quantity of the powdered drug in 360 c.cm. of water are also given each day. Emphasis should be laid on the necessity of limiting the amount of emetine-bismuth iodide in the treatment of relapses to 4.3 grm. in the course of 24 days.

POLIO-ENCEPHALO-MYELITIS.

In this issue we publish an article by Drs. J. B. Cleland and A. W. Campbell on their observations and experiments in connexion with a disease which has been termed the "mysterious" disease, "X" disease and an aberrant form of acute polio-myelitis. These authors regard the disease as a distinct entity and describe it pathologically as polio-encephalomyelitis. We have published a very excellent account of the pathological changes discovered in a human case of acute polio-myelitis and of the changes found in a *Macacus* monkey infected by means of the unfiltered emulsion of the spinal cord of the patient.[1] The changes in the spinal cords in these two cases are described as of an interstitial, inflammatory nature, involving chiefly the dorsal segments. In the present communication the authors describe the lesions as primarily an inflammatory involvement of the perivenous spaces distributed indifferently throughout the brain and spinal cord. Areas of necrosis, like those frequently found in marked cases of acute poliomyelitis, were present in only one of the sixteen patients examined. It would thus appear that the lesions of the cases studied by Drs. Cleland and Campbell differed from those of ordinary acute polio-myelitis, both in

[1] A Contribution to the Experimental Pathology of Acute Polio-myelitis (Infantile Paralysis), by Drs. A. W. Campbell, J. B. Cleland and Burton Bradley, *The Medical Journal of Australia,* February 16, 1918.

distribution and in intensity. Importance is attached to the absence of paralysis dominating the clinical picture, both in the experiment animals and in the human patients. Wickman has described a cerebral type of acute polio-myelitis and many other clinicians have confirmed this observation. In these cases the paralytic symptoms are less prominent than in the classical spinal types. The present communication places on record the valuable work carried out by the two authors. The data given are insufficient to enable us to discuss the findings and the deductions drawn from these findings. When the protocols of the experiments are available it will be possible to analyse these points in detail.

Naval and Military.

APPOINTMENTS.

The following appointments, etc., have been announced in the *Commonwealth of Australia Gazette*, No. 34, of March 30, 1918:—

Australian Military Forces.

First Military District.

Australian Army Medical Corps—

Captain (Honorary Major) A. Y. Fullerton to be transferred from the Australian Army Medical Corps, 2nd Military District, with corps seniority next before Captain R. S. Berry. Dated 1st February, 1919.

Australian Army Medical Corps Reserve—

Captain (Honorary Lieutenant-Colonel) H. H. B. Follitt to be granted the temporary rank and pay of Lieutenant-Colonel whilst employed (part-time) as President Permanent Medical Referee Board. Dated 16th January, 1919.

Second Military District.

Australian Army Medical Corps—

Captain (Honorary Major) A. Y. Fullerton to be transferred to the Australian Army Medical Corps, 1st Military District, with corps seniority next before Captain R. S. Berry. Dated 1st February, 1919.

Major (Honorary Lieutenant-Colonel) J. S. Purdy, D.S.O., to be transferred to the Australian Army Medical Corps Reserve. Dated 1st November, 1918.

Australian Army Medical Corps Reserve—

Clifford Norval Douglas to be Honorary Captain. Dated 25th November, 1918.

Honorary Captain G. C. Harper to be granted the temporary rank and pay of Major whilst employed as a member of the Permanent Medical Referee Board. Dated 29th January, 1919.

Third Military District.

Australian Army Medical Corps—

Captain, provisionally (Temporary Major), R. F. O'Sullivan relinquishes the temporary appointment of Staff Officer, on the Staff of the Director-General, Australian Army Medical Services, and the temporary rank of Major, 31st January, 1919, and to be transferred to the Australian Army Medical Corps Reserve, with the rank of Honorary Captain. Dated 1st February, 1919.

Gilbert Gocher to be Captain (provisionally). Dated 1st January, 1919.

Robert Edward Dunn to be Captain and Honorary Major. Dated 1st January, 1919.

Captain (Honorary Lieutenant-Colonel) E. T. Brennan, D.S.O., M.C., Australian Army Medical Corps, 5th Military District, to be granted the temporary rank and pay of Lieutenant-Colonel whilst employed as President, Permanent Medical Referee Board. Dated 25th January, 1919.

Australian Army Medical Corps Reserve—

Honorary Captain J. P. Major to be granted the temporary rank and pay of Major whilst employed as Senior Visiting Physician, No. 11 Australian General Hospital, and Member of Permanent Medical Referee Board. Dated 3rd February, 1919.

The resignation of Honorary Major T. H. Boyd of his commission is accepted. Dated 7th February, 1919.

Honorary Captain S. M. Ware to be granted the temporary rank and pay of Major whilst employed as Member, Permanent Medical Referee Board. Dated 6th January, 1919.

William Heitland Godby to be Honorary Captain. Dated 23rd March, 1915.

Captain (Honorary Major) D. C. Pigdon to be transferred to the Australian Army Medical Corps, and to be Captain and Honorary Major. Dated 1st January, 1919.

Honorary Captain G. W. Smithwick to be transferred to the Australian Army Medical Corps, and to be Captain (provisionally). Dated 1st January, 1919.

Fifth Military District.

Australian Army Medical Corps Reserve—

Honorary Major F. T. A. Lovegrove to be granted the temporary rank and pay of Lieutenant-Colonel whilst performing the duties of President, Permanent Medical Referee Board, 5th Military District. Dated 1st February, 1919.

Unattached List—

Captain S. C. Joel to be transferred to the Australian Army Medical Corps, with seniority as from date of transfer. Dated 1st January, 1919.

GRANT OF HONORARY RANK.

The undermentioned, who have served in the Australian Imperial Force as commissioned officers, to be appointed to the Australian Army Medical Corps Reserve (temporarily), and to be granted honorary rank equivalent to that held by them in the Australian Imperial Force:—

Officers who, on appointment for active service outside Australia, were not serving in the Australian Military Forces.

Second Military District.

To be Honorary Majors—

D. S. Mackenzie, D.S.O. Dated 14th November, 1916.

E. H. Burkitt. Dated 4th September, 1917.

Third Military District.

To be Honorary Major—

H. I. Carlile. Dated 20th June, 1917.

TERMINATION OF GRANT OF TEMPORARY HONORARY RANK.

Australian Army Medical Corps Reserve—

The temporary honorary rank of Lieutenant-Colonel granted to J. A. Murdoch, C.M.G., and that of Honorary Major to C. Edgington, to be terminated. Dated 21st January, 1919.

It has been announced that Surgeon-Commander Algernon Carter Bean will relinquish his office of Director of Naval Medical Services within a short time, to enable him to return to his previous duties in the Royal Navy. It is further announced that Surgeon-Commander Edward Thomas Philip Eames, R.N., will succeed Surgeon-Commander Bean as Director of Naval Medical Services.

An alteration has been made in the regulations of the Education Department of Western Australia, empowering the medical officer of a local Health Board to close the school if he considers it necessary. When such an order is given, the head teacher has to communicate immediately with the Department.

We regret to record the death, which took place at Toowoomba, of Dr. Henry Donald Welply, of Goondiwindi.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(98) Syphilis of the Tongue.

George Culver found that amongst 530 cases of syphilis seen by him in private practice there was involvement of the tongue in 27 (*Journ. Cutaneous Diseases*, January, 1919). There was one instance of lingual chancre, nine instances with mucous patches, eight with gumma, nine with chronic specific glossitis, including leukoplakia and four of leukoplakia associated with other phases of chronic specific glossitis. Of the 27 cases, 23 were in males and four were in females. A striking feature in the eight cases showing gummata of the tongue was the shortness of the duration, ranging from two weeks to six months. The Wassermann reaction was positive in all but one of these cases and one of the cases with a positive Wassermann examined pathologically and diagnosed as a gumma was four months later found to have become epitheliomatous. Culver states that these gummata may begin either in the body of the tongue as a submucous gumma or as a miliary gumma within its mucous membrane. If submucous, the patient's warning is usually early, with sensitiveness or pain. At first the growth feels quite firm, but as it soon softens in the centre, by the time the patient is seen it has a doughy feel and, before necrosis occurs it will give rise to an elevation on the dorsal surface. The gumma has a resilient induration, not the boardy hardness of an epithelioma. When necrotic, it usually breaks on the dorsal surface and gives rise to a deep, ragged, undermined ulcer in this location, with a rim of induration about it, still lacking the cartilaginous hardness of an epithelioma. There may be and often is more than one gumma present. Miliary gummata beginning in the lingual mucous membrane are painful early; they ulcerate quickly and have typical infiltrated edges. The edges of these are harder than those of ulcerations from the deeper-seated gummata and the bases are less spongily necrotic. Clinically it may be extremely difficult to distinguish them from an epitheliomatous ulcer which is observed too early to be associated with lymphatic enlargement. A biopsy is indicated when doubt arises. Absence of lymphatic enlargement is almost invariably the rule with gumma, but it must be remembered that superadded pyogenic infection may occasionally cause some slight adenitis. Of the nine patients affected with chronic specific glossitis three gave a negative Wassermann reaction, whilst the reaction in two was not determined. Although the duration of these cases was from one to nine years, there was an entire absence of epitheliomatous degeneration. In almost every instance an incorrect diagnosis had been made, so that the author is of opinion in doubtful tongue lesions it is not only a justifiable procedure, but one to be urgently advised, to administer salvarsan as a therapeutic test, even though the Wassermann test prove negative.

(99) Retention Cysts of the Mucous Membrane of the Lip.

Richard L. Sutton (*Journ. Cutaneous Diseases*, December, 1918) calls attention to the fact that, although cases of simple retention cysts of the lip are more frequently encountered in the practice of dermatology than in any other branch of medicine, yet a description of this condition is not to be found in works on dermatology. The condition is only mentioned casually in a few text-books on surgery. In the past four years he has seen eleven typical examples and in none of the cases was there are deformity, such as hare lip. Just beneath the labial mucosa are situated the labial glands, 40 to 60 in number, in reality diminutive salivary glands, and it is the ducts of these glands which are principally affected. These ducts are lined with a single layer of cylindrical epithelium. Virchow found the contents to be two-fold, mucous and epithelial cells. If the epithelial cells are very numerous, the fluid contents assume a cloudy appearance. Clinically these cysts vary in size from that of a pin's head to that of a small hazel nut and are usually present on the lower lip at a point overlying the left cuspid tooth. The lesions are painless and in colour paler than that of the normal mucous membrane. If incised, a whitish, glairy, ropy fluid escapes and on closure of the opening the cyst again reforms. Incision, evacuation and the application of tincture of iodine or cauterization with zinc chloride, of phenol, followed by alcohol, has been recommended. The author is of opinion that this method may suffice for the milder cases. His experience has shown him that removal of the sac *in toto* under novocain anæsthesia gives the best results.

(100) Radium in the Treatment of Basal-Celled Cancer.

Martin Engman and John S. Kimbrough (*Urologic and Cutaneous Review*, January, 1919) discuss the treatment by radium of the basal-celled cancer (or rodent ulcer) as opposed to the prickle-celled form (or epithelioma). The former type causes death by direct extension and is not characterized by metastasis. Surgical treatment is not recommended on account of the resultant scarring. X-rays are quite efficient as a form of treatment, but the authors consider that radium dosage is easier and more exact than the present method of treatment and measurement of dosage by Röntgen rays. With X-ray treatment there is a risk of recurrence at the periphery and there is also the risk of producing an X-ray burn. The degree of reaction from radium, noticeable after a few days and lasting some weeks, is of value in prognosis. The technique consists in the application of 25 milligrammes in German silver and rubber for six hours. Such an application generally effects a cure, but the patient must be kept under observation for some time and a second application made if necessary. Several illustrative cases are recorded.

(101) The Value of Chest Fluoroscopy.

F. E. Diemer and R. D. McRae (*Journ. Amer. Med. Assoc.*, January, 1919) deal with the results of the fluoroscopic examination of the chests of 13,893 men who were drafted into the United States Army and cover a period of about 4½ months. The apparatus used was the United States Army standard outfit and the Coolidge self-rectifying tube. The examinations were made, not only with a view to confirming the clinical diagnosis of tuberculosis, but also for the detection of chest conditions which may have been missed by the clinician. The fullest amount of work possible for one Röntgenologist was found to be about an hour in the morning and an hour in the afternoon. As a routine an examination was made of all men with a family history of tuberculosis or with a previous history of chest affections, recurrent colds, expectoration, loss of weight or strength, or night sweats. All patients with cervical adenitis, diseased bones, rectal fistula or chest deformity were classed for fluoroscopy. In 425 the patients were found to be suffering from chest disease, unfitting them for service. Of this number, 58.3% were suffering from undoubted tuberculosis, whilst in a number of men there were suspicious fluoroscopic signs which were later clinically proved to be tubercular (28.1%). Adhesions and calcified areas were discovered in 7.5%. The number of cases which were diagnosed by fluoroscopy and still showed no clinical signs, amounted to 3%. In determining the chronicity of cases, observations of the diaphragm excursion is of prime importance and the presence of pleuro-diaphragmatic and pleuro-pericardiac involvement can only be definitely recognized by fluoroscopy. Localized and interlobar effusions are easily detected and the method cannot be overestimated in the diagnosis of post-pneumonic conditions. The authors attach much importance on the degree and uniformity of illumination of the apices and recommend the use of the long, horizontal diaphragm slit and investigation of the two apices at the same time. By fluoroscopy it is easier to detect aortic enlargement than it is by radiography, the anterior oblique position being of such importance in the study of the aortic arch. Bronchiectasis is recognized by the increase of density and the dilatation of the affected bronchus. Pneumonoconiosis is difficult to distinguish from a chronic bronchitis and also from some forms of tuberculosis.

BIOLOGICAL CHEMISTRY.

(102) The Casein of Human Milk.

A. W. Bosworth and L. A. Giblin (*Journ. Biol. Chemistry*, July, 1918) have investigated a sample of casein separated from human milk in the same way as the samples of casein from the milk of the cow and the goat previously ex-

amined by them. The milk used for this purpose was collected each morning and treated as soon as it reached the laboratory. The fat was separated in the centrifuge and the casein precipitated by the addition of acetic acid. The precipitated casein was purified in the same way as the casein of cow's milk, except that the treatment with ammonia and ammonium oxalate was omitted, since cow's milk does not contain the lime salts which make this treatment necessary in preparing bovine casein. The final product contains 5.31% of moisture. On analysis it contained 15.75% nitrogen, 0.70% phosphorus and 0.70% sulphur calculated on dried substance. These figures are practically the same as those obtained for the casein from the cow and the goat. A study of the combining relation of this human casein with bases shows that the valency of the casein from human milk, like that of the caseins from the milks of the cow and goat, is 8. The molecular weight is therefore 8,888 and the equivalent weight 1,111. On the basis of the percentage of sulphur the molecular weight would be 9,162 on the basis of two atoms of sulphur. On the basis of the percentage of phosphorus the molecular weight would be 8,868, on the assumption that there are present two atoms of phosphorus. Pure solutions of human acid calcium caseinate curdle on the addition of rennin in exactly the same manner as the casein from cow's milk. The single molecule of casein gives two molecules of paracasein. The paracasein thus formed has one-half the molecular weight of casein and has a valency of four, one-half that of casein.

(103) The Separation of Pure Casein.

L. L. Van Slyke and J. C. Baker (*Journ. Biol. Chemistry*, July, 1918) have devised a modification of the method for precipitating the casein of cow's milk. They noticed from the work of Van Slyke and Bosworth that soon after milk coagulates during the process of souring, the whole of the calcium and inorganic phosphorus of the milk is in solution. They have therefore introduced into undiluted milk an amount of acid just insufficient to prevent the coagulation and have maintained the mass of milk in the same condition for some hours. On the further addition of acid the casein is precipitated in a form containing little ash and phosphorus. They have found it important to add the acid gradually, in such a way as to prevent any coagulation of casein at the point of contact of the acid with the milk. They have designed an apparatus by which acid is introduced under the surface of the milk, in close relation to a rapidly-moving stirrer. The amount of acid needed depends upon the initial acidity of the milk, but is usually about 90 c.cm. normal lactic acid per litre. The mixture of milk and acid has been kept from two to four hours with gentle stirring. The casein is precipitated by the further addition of acids and the use of the centrifuge. The casein is washed with water, later with alcohol and finally with ether. A number of samples of casein have been prepared. The composition of the different samples varies with details in the preparation. The purest samples show an ash content of 0.10% and yield 0.80% phosphorus. The authors claim the following advantages. A preparation of casein can be made within ten hours. As the milk is used without dilution, much time and labour is saved, due to the lessening of the amount of material handled. An unnecessary excess of acid is avoided. The time of contact with reagents need not exceed six hours. At no time is the casein brought into contact with alkali. The casein contains no calcium phosphate and no form of calcium caseinate. The casein easily and quickly dissolves in solution of alkalies and in access of lime water. By this method it is possible to obtain all the casein in the milk in pure form without appreciable loss.

(104) Amino-Acids in the Tissues.

H. H. Mitchell has carried out some experiments on the influence of feeding with proteins on the concentration of amino-acids and their nitrogenous metabolites in the tissues of rats (*Journ. Biol. Chemistry*, December, 1918). In recent years much information has been derived about the fate of proteins in the animal body as a result of the discovery of accurate methods for the determination of amino-acids in the organs and tissues of animals. The general features of the manner in which the mammalian organisms makes use of the energy of the proteins has become evident. There is now no reason to believe that the amino-acids undergo any appreciable change during their passage through the walls of the intestines into the blood and lymph. The ready access of the amino-acids in greater or less amounts to all the tissues of the body is no longer doubted. It thus appears that the proteins undergo complete hydrolysis into amino-acids in the digestive canal and that the amino-acids are distributed to all parts of the body. These amino-acids yield, on the one hand, a series of nitrogenous substances of which the transformations have been determined experimentally with a large measure of success. On the other hand, the residual non-nitrogenous substances produced simultaneously have eluded direct experimental research *in vivo*. This circumstance is unfortunate, since these residual substances contain practically all the physiological available energy of the original amino-acids. It has been shown repeatedly by many investigators that the concentration of amino-nitrogen in the blood may be doubled or even tripled during the digestion of a meal rich in proteins. Experiments on the results of the injection of amino-acids into the venous blood of dogs demonstrate that the tissues absorb rapidly amino-acids from the blood. Equilibrium is reached when the tissues contain roughly ten times the concentration of amino-acid present in the blood. Muscle and kidney tissue retain all the amino-acids absorbed in this way for three or four hours. The liver, although capable of absorbing a greater amount of amino-acids per unit of weight than any other organ, does not retain them for any length of time. In three or four hours the excess of amino-acids has disappeared. Simultaneously with their disappearance from the liver there is an increase in the concentration of urea in the blood. It has been stated that dogs which have fasted for 48 hours show an increased concentration of urea in the blood immediately after consuming a heavy meal of meat. The author has conducted experiments to determine whether an increase in the concentration of amino-acids in the tissues does occur during the digestion of proteins. Albino rats have been used, since the analysis of the entire carcass presents no difficulty in such small animals. The figures show that, in the vigorously growing animal, there is a distinct increment in the concentration of amino-acids in the tissues during the digestion of protein, but that this increment decreases in amount as the rate of growth decreases, until the increment is only of moderate or even insignificant dimension in the adult.

(105) Formation of Endogenous Purines.

H. B. Lewis and E. A. Doisy have studied the influence of diets containing large amounts of proteins upon the elimination of endogenous uric acid (*Journ. Biol. Chemistry*, October, 1918). Investigators have already agreed that a high protein content in the diet augments the output of endogenous purine nitrogen. They do not, however, show any unanimity in respect to the cause of the enhanced excretion. Ackroyd and Gowland Hopkins have suggested that arginine and histidine may serve as the source of the purine-ring in the growing rat. The authors have carried on observations upon two healthy men, and have fed them upon two rations, both rich in nitrogen, but one has contained little arginine and histidine, while the other has been rich in these substances. There has appeared to be no difference in the excretion of uric acid on the two diets. The rations have consisted of potatoes and a little bread, to which glidine has been added when little arginine and histidine have been given, and peanuts when much of these bodies has been required.

(106) Cholesterol in Milk.

W. Denis and A. S. Minot have made a series of estimations of the amount of cholesterol in cow's and human milk (*Journ. Biol. Chemistry*, October, 1918). They have utilized the micro method of Bloor for the determination, as it can be so rapidly performed. The fats have been measured in the samples by the Babcock test. They have found that the amount of cholesterol in cow's milk varies from 105 mg. to 176 mg. per litre, and appears to bear a direct and proportional variation to the quantity of fat. In fifty samples of human milk the figure for cholesterol has varied from 96 mg. to 380 mg. per litre. There have been many exceptions in regard to the proportionality to the quantity of fats.

THE HEALTH OF WESTERN AUSTRALIA.

The annual report for the year 1917, of Dr. Everitt Atkinson, Commissioner of Public Health, Western Australia, covers close on ten pages, and has been issued together with a number of appendices in a document of thirty-five pages.

Cost of the Work.

The Departments under the control of the Commissioner are the Medical, the Health, the Factories and the Early Closing Departments. The expenditure in the first-named Department amounted to £98,903, which is equal to 6s. 4½d. per head of population. Of this sum, £20,250 was spent in the maintenance of Government hospitals, £35,874 represented the grants to public and assisted hospitals and £425 represented the grants to district nurses. The expenditure is £6,265 less than in the previous year. The cost of administration and general workings of the Public Health Department amounted to £14,937 or 9.2d. per head of population. It appears that the item venereal diseases was responsible for the expenditure of £3,324. This item and also an item dealing with the Government sanitary service account for a material increase in the year's expenditure. We learn that the cost of treatment per patient per diem at the Perth Public Hospital was 6s. 7¾d. for the year under review, as compared with 6s. 1½d. of 1916, while in the Fremantle Public Hospital it was 8s. 2½d., as compared with 6s. 11½d.. The average cost of treatment at the assisted hospitals was £1 5s. 3¾d.. These hospitals, however, include several small country institutions.

Vital Statistics.

The population of Western Australia on December 31, 1917, was estimated at 309,423. The birth-rate was 25.5 per 1,000 of population in 1917 and 27.21 in 1916. The death-rate was 9.0 per 1,000 of population in 1917 and 9.8 in 1916. The infantile mortality was 57.7 per 1,000 births in 1917 and 66.63 in 1916. It appears that the death-rate in Western Australia was next to that in Tasmania (8.88) the lowest in the Commonwealth, while the infantile mortality was the highest, the second highest being in New South Wales.

Infective Diseases.

Enteric Fever.

During the course of the year 260 cases of enteric fever were notified, as compared with 359 in 1916. The number of deaths was 29, which yields a case mortality of 11.5%. No less than 176 of the 260 cases occurred in the first five months of the year. Dr. Atkinson points out that the reduction in the incidence of the disease can be traced to the introduction in the city area of the water carriage system of sewage disposal. The number of cases recorded in Perth dropped from 80 in 1916 to 36 in 1917. A small reduction took place in Subiaco and in Boulder, while in Kalgoorlie the number increased from 20 to 40.

Diphtheria.

During the course of the year 1917 800 cases of diphtheria were notified, as compared with 757 in the preceding year. The number of deaths was 31. The case mortality of 3.87% was slightly higher than that registered in 1916. Dr. Atkinson does not refer in his report to the steps taken with a view to detecting and cutting off the sources of infection.

Scarlet Fever.

Scarlet fever in Western Australia, as we pointed out in this Journal on February 15, 1919, is a disease of singularly low mortality. In 1917 there were 247 cases without a death; while in 1916 there were 121 with one death.

Tuberculosis.

During the year 1917, 464 cases of pulmonary tuberculosis were notified in the State, while in 1916 511 were notified. The number of deaths was 217. The number of deaths from all forms of tuberculosis was 242. This represents an appreciable reduction, as compared with 1916. No information is given concerning the means adopted to combat tuberculosis in this State. In an appendix Dr. R. M. Mitchell, the Chief Resident Medical Officer of the Wooroloo Sanatorium, gives an account of the year's work in this institution. On the last day of 1916 there were 188 patients in the Sanatorium. During the year 1917 376 patients were admitted. The total number of deaths in the Sanatorium during the year was 108, while 252 patients were discharged. Of the patients under treatment, 173 were in the first stage of the disease, 78 were in the second stage and 306 in the third stage. These figures testify to the fact that the Sanatorium is largely put to a wrong use. Dr. Mitchell points out that medical practitioners are too prone to keep patients under their care outside until they reach a stage when nothing can be done to effect a cure. A large and well-equipped sanatorium situated in highly advantageous surroundings should be used exclusively for the treatment of early infections and should not be allowed to deteriorate into a home for persons suffering from incurable disease. The visiting nurses apparently have done much for inducing patients in the early stages of disease to attend the medical department for examination. It has then become a relatively easy matter to persuade some of them to enter the Sanatorium. On the other hand, Dr. Mitchell has found that many of the Kalgoorlie miners are unwilling to give up their occupation and to place themselves under his care. He mentions that the Sanatorium provides a measure of isolation in cases of advanced disease. This is undoubtedly of value in the campaign against a national disease, but we venture to express the opinion that isolation could be effected at a smaller cost and without the obvious disadvantage of bringing persons in danger of death into close proximity with those whose disease is curable.

In February, 1917, a portion of the institution was taken over by the military authorities and named the No. 2 Australian General Hospital. Eighty-one soldiers were treated in this part of the institution. Dr. Mitchell is gratified at the excellent results obtained, but he expresses some misgivings in regard to the conditions under which these men will have to earn a living.

Diarrhœa and Enteritis.

A short paragraph is devoted to the diarrhœa and enteritis of infants under two years of age. Dr. Atkinson points out that the reduction in the number of deaths (from 169 to 97) is concurrent with the reduction in the incidence of enteric fever. He is inclined to regard the improvement in connexion with both diseases as attributable to the results of the water carried system of sewage. Further evidence, however, is necessary before this can be accepted as an explanation for the reduced number of deaths from infantile diarrhœa.

Erysipelas.

In 1917, 79 cases of erysipelas were notified in the State, as compared with 55 in the preceding year. The number of deaths in 1917 was two and in 1916 was five.

Septicæmia and Puerperal Fever.

The records of 1917 show that 38 cases of puerperal fever were notified, as compared with 25 in the year 1916. The number of deaths was 12 and the case mortality 31.6%.

Beri Beri.

Dr. Atkinson is unable to offer any explanation for the fact that the incidence of beri beri has become more than doubled. In 1917 218 cases were notified, while in 1916 there were but 105. The number of deaths from this disease amounted to 27, which yields a case mortality of 12.3%.

Other Notifiable Diseases.

No special mention was made of the incidence of the other notifiable diseases. It appears that there were 27 cases of cerebro-spinal meningitis, 15 of bilharziosis, 13 of malaria and nine of purulent ophthalmia, three of anthrax and two of poliomyelitis. A few words are devoted to the death records of pertussis, which is not a notifiable disease in the State. There were 25 deaths, which represents a mortality of 0.081 per 1,000 of population.

Venereal Diseases.

Dr. Atkinson devotes close on two pages of his report to a general review of the report of the British Royal Com-

mission. He deals *seriatim* with the recommendations of the Commission and shows that in Western Australia all the recommendations which were applicable in the State, had been carried into effect. In justifying the adoption of compulsory notification, he states that in the absence of legislation including this provision, they would not have had the knowledge that in two years 2,653 persons in Western Australia had contracted a venereal disease. He admits that this figure may represent but 50% or less of the actual prevalence.

During the year 1917 the total number of notifications received by the Department was 1,728. Of these, 282 referred to infections in soldiers. The total number of individuals infected was 1,316. There were 279 persons suffering from syphilis, including 149 civilian males, 50 soldiers and 84 women. Of the 279 infections, 203 were in the primary or secondary stage, that is recent infections. There were 55 cases of tertiary syphilis and 21 of congenital syphilis. In the year 1916 the relative frequency of syphilis in men and in women was 7: 1. In the year under review the proportion works out at 2.3: 1. In 1916 only one case of primary syphilis in a woman was recorded. In 1917 there were 15. Dr. Atkinson regards this as evidence that women have attained a more ready recognition of the disease. The relative proportion of syphilis reported in the secondary stage between males and females was 5: 4, as compared with 4: 1 in 1916. Similarly, with tertiary disease the proportion in 1917 was 7: 4, as compared with 4: 1. Dr. Atkinson discusses the apparent increase of disease among female patients and calls attention incidentally to the fact that there was an apparent decrease of syphilis in all its stages among males. He is almost tempted to regard the increase in the notification of female patients as evidence of the greater frequency with which the treatment has been sought. It appears to us that in the early period the advantages of notification and treatment were not apparent to the majority of infected women. The proportion of 7: 1 is surely artificial and does not reflect the relative incidence of syphilis in the two sexes, but merely the relative frequency of notification. We would require more evidence than is at present available before we could be satisfied that the reduction in the number of notifications of disease in men reflects an actual diminution in the frequency of infection. The medical profession as well as the community has yet to be educated to the hygienic importance of notification and it is not improbable that some years may pass before every case of fresh infection is notified to the health authority.

During the year 1917 1,231 notifications were received of a gonorrhœal infection. The total number of persons involved was 964.

Later, when larger statistics are available from other States, it may be interesting to revert to these figures and more especially to the frequency of the disease among the general population. We have the record that in 1917 3.1 per 1,000 of population suffered from gonorrhœa in Western Australia, according to the notifications. This number is made up of 603 civilians, 220 soldiers and 141 females. The ages of the patients varied widely. There were four male patients under ten years of age and there were eight of 60 and over. The frequency was highest in the third decade of life, next highest in the fourth and next highest in the fifth. A still more shocking story is revealed in the figures relating to the female patients. There were no less than thirty girls under ten years of age in the lists. The frequency was somewhat lower in the second decade of life; it reached its maximum in the third decade; the numbers fell off considerably in the fourth, while in the fifth and sixth there were but three and four respectively. In 1916 the proportion of males to females infected was 11: 1, while in 1917 it was 6: 1. The total number of cases notified in 1917 was considerably higher than in the preceding year.

Little need be said concerning the information given under the rubrics of chancroid and granuloma, of which there were 46 and 27 cases respectively. In regard to the military cases, it appears that of the 282 infections, 242 were contracted within the State, 24 were contracted abroad, 15 in the eastern States and one in New Zealand. In summing up the position, Dr. Atkinson pleads for greater enlightenment of the public in regard to the ravages of these diseases and looks for powerful support to the Western Australian Branch of the National Council for Combating Venereal Diseases recently formed in the State.

Bacteriological Work.

In the course of the year a large amount of diagnosis work was carried out in the bacteriological laboratories of the Department. In addition, many pathological examinations and chemical analyses were carried out.

General Hygiene.

The Commissioner makes some general remarks concerning the advisability of requiring farmers to submit to the provisions of the *Health Act* in regard to slaughtering and dairy-farming. Many farmers slaughter sheep occasionally. They have hitherto not been required to register their premises as slaughter houses. The Commissioner holds the opinion that unless a definite number of sheep, for example three, are slaughtered each week, it is unnecessary to apply the *Act* strictly. Similarly, certain concessions are made to country farmers who keep a few cows and adopt dairying as a secondary undertaking.

The meat exported during the year 1917 was inspected and certificates issued with each consignment. The amount was small. Systematic meat inspection at the Metropolitan and Kalgoorlie Abattoirs was carried out. The total number of cattle slaughtered was 29,339, of calves 1,751, of sheep 278,435 and of pigs 35,140. In 311 cases the carcases were condemned. In 1,160 cases parts were condemned, while organs, such as liver, tongue, etc., were condemned in 16,252 cases. The most common lesions found were parasitic cysts, necrosis, melanosis, abscess, tuberculosis, congestion, actinomycosis, fatty infiltration and cirrhosis.

Factories and Early Closing.

Although the report of the Chief Inspector of Factories required by the *Factories Act, 1904*, is addressed to the Commissioner of Public Health, it is quite evident that factory hygiene in its true sense scarcely exists. We recognize that in Western Australia the number of factories is probably not large enough to justify the appointment of a medical staff whose duties would include the supervision of the various industries in regard to the health of the workers. The Chief Inspector publishes a table of defects which needed rectification. Two thirds of these defects appear to be connected with the insanitary conditions of certain factories. There were fifteen instances in which fumes and dust were not properly disposed of. It is unnecessary in this place to call attention to the advisability of a systematic control of the health of the workers in factories where chemical fumes and chemical dusts are present in the atmosphere.

The sections dealing with the *Early Closing Act*, the *Employment Brokers Act* and the *Industrial Arbitration Act* do not call for special comment.

School Hygiene.

Dr. Roberta Jull, the Medical Officer of Schools, calls attention in her annual report to the fact that the inspection of school children is not compulsory. Notwithstanding this fact, she examined practially all the children in eleven schools visited by her between May and December, 1917. She states that the general standard of health and of intelligence was good and makes the same remarks concerning cleanliness, with the reservation that pediculosis, which was found in 19.4% of the children, was undoubtedly very high.

The total number of children examined was 3,761. Of these, 729 had pediculosis, 69 had impetigo, 40 acne, 21 ringworm, 20 eczema and 4 scabies. In addition, there were 21 instances of unclassified rashes. The total number of eye defects was 982. At first all defects were recorded when the children were unable to see $^6/_6$. Later, the Medical Officer, on discovering this, introduced the standard agreed upon at the Conference of School Medical Officers held in Sydney in December, 1916. The percentage of children with visual defects were 16.5. The total number of nose and throat defects was 3,705. Of these, 1,331 were enlarged cervical glands, 1,292 were enlarged or diseased tonsils and 638 were adenoid vegetations. Dr. Jull does not mention the number of children in whom these defects occurred.

As compared with the defects of the nose and throat, those of the ears were relatively infrequent. Defective hearing was discovered in 215 cases. Apparently, no ear defects were detected in children with unimpaired hearing. Only 16 of the children had otorrhœa. There were 22 instances of mitral disease, two of patent *foramen ovale* and eight of functional defects of the heart. Anæmia was found 97 times. There was apparently very little respiratory disease among the children. Pulmonary tuberculosis was suspected in four children, atelactasis was discovered in two and two further children had bronchitis. In regard to the nervous system, there were three cases of epilepsy, two of poliomyelitis, two of chorea (should not this condition be classified among the infective processes?) and two of hysteria. The number of mental defectives recognized was seven. This represents a frequency of 1.86 per 1,000 children. Dr. Jull refers to the work carried out by Professor Berry and Mr. Porteus in Melbourne and admits that a much larger number than seven would represent the dull or very dull children. The diagnosis has been made on the observation that the child is three or more years behind the normal child in school work. This classification would exclude from the category of mental defectives all those children whose power of learning is not much impaired, but whose moral propensities and general understanding of the modern conventions usually spoken of as ethics diverge considerably from normal or average children. A school teacher, no doubt, has opportunities for observing certain qualities in the pupils. These include the power of concentration, the memory, the facility for understanding and retaining facts, the power of profiting by experience and the rate at which the mind responds to external stimuli. Few teachers, however, are sufficiently gifted to be able to assess these characters at their relative value in the children under their care. The employment of mental tests is essential if it is desired to keep a real record of the mental capabilities of school children.

Postural and other bony defects were extremely common. There were no less than 474 cases of kyphosis and 174 of scoliosis. Marked lordosis was seen twice. There were 81 children with flat feet.

Dr. Jull states that evidence of rickets was noted in 180 children. It would be interesting to learn the nature of the evidence, since marked osteo-genetic changes are held to be uncommon in Australian children. Inguinal herniæ were present in 31 children and umbilical herniæ in four.

Carious teeth were extremely common. In 1,164 children up to three teeth were affected, while in 1,331 four or more teeth were carious. The percentage of children with dental defects was 79.6.

The total number of defects discovered was 14,949 and the total number of children with defects of sufficient importance to warrant a notice being sent to the parents was 2,540. As stated above, 2,996 of these children had defective teeth. It is probable, however, that many of the children with other defects are included in this 2,996. Under one third of the children received treatment after the parents had been notified of the necessity.

Dr. Jull records that at two schools it was ascertained that only 675 children out of a total of 2,416 had been successfully vaccinated. It was stated that a further 57 had been unsuccessfully vaccinated.

During the course of the year leaflets explaining the reason why the parents are recommended to have the defects of hearing, posture, etc., remedied have been freely circulated. Another innovation consists in the institution of short talks to the parents at the time of the medical inspection of the children. The parents are invited to the school for this purpose and those who attend derive considerable benefit, with the result that the majority of their children receive the necessary treatment for the alleviation of their defects. In addition to these means, a system of following up is carried out by the school nurse.

PNEUMONIC INFLUENZA.

His Excellency the Governor of South Australia and the Executive Council authorized on March 6, 1919, the Central Board of Health to stop all or any traffic and to limit and prevent the ingress, egress and regress of any person to or from any house or premises and to limit and prevent the carriage of any person in any vehicle. This order, which is given under the provisions of the *Health Acts, 1898-1918*, has the object of empowering the Central Board of Health to apply isolation of persons for the purpose of checking the spread of "the infectious disease known by the name of influenza or a febrile, toxic septicæmic condition similar to influenza, including pneumonic."

His Excellency in Council revoked on the 6th day of March, 1919, an Order similar to the Order referred to above applying specifically to "an outbreak of the infectious disease called influenza vera."

On March 5, 1919, the Minister of Public Health of Victoria published a cancellation of the regulation dealing with restrictions of pleasure traffic (see *The Medical Journal of Australia*, March 15, 1919, page 217).

Special Correspondence.

(By Our Special Correspondent.)

LONDON LETTER.

Educational Ideals.

The presidential address to the Association of Education Committees of England and Wales was delivered at the Caxton Hall, Westminster, by Mr. E. H. Cook, of Bristol, on June 7, 1918.

He pointed out, in the course of his remarks, that one of the greatest difficulties in our elementary education was the provision of teachers. A decline of 800 in the number of persons presenting themselves as intending teachers in 1918, as compared with 1916, was a serious state of things. Substantial increase in salaries was an important factor in bringing about an improved state of affairs, but so far as mere money-making was concerned teaching was and would remain a poor business. There ought to be some compensation for the financial sacrifices teachers were called upon to make, and the public and education committees should be educated to give the teaching profession a higher social position than it now held, as was done with teachers of religion, who were, financially, even worse off. To provide for requirements in the near future, relaxations of restrictions as to qualifications would be inadequate. Good natural teachers, requiring little or no training existed, but not in sufficient numbers, and possibly a small number of discharged sailors and soldiers would be available.

Scholarships should be given only as a mark of merit, and selection should be absolutely impartial and unhampered by extraneous restrictions. He put in a strong plea for travelling scholarships. There was need for closer connexion between the various parts of our educational machinery, and especially was this the case with the universities. These should be, in fact, as they were in theory, the head and ultimate goal. There must be a closer connexion between industry and the university; the old exclusiveness must be broken down. In every university a body of scientific observers and experimenters should be closely in touch with large employers. It ought to be quite as easy for a man to take a degree in commerce as in arts or science, and a course of study in which modern languages should have prominent place could be drawn up, and would attract men destined for a business career. The presence in councils and senates of a proportion of hard-headed, non-sentimental, business men, capable of looking at life from a standpoint other than that of the cloister or library, would introduce a leaven of everyday thought into university control, which, in some instances, was sadly lacking.

Some Effects of the War on Health.

At the annual conference of the Sanitary Inspectors' Association held in London on September 13, 1918, the presidential address was delivered by Sir James Crichton-Browne.

In the course of his oration Sir James pointed out that preventive medicine, in conjunction with antiseptic surgery, had accomplished an annual saving in the Army now in France of 300,000 lives. At home, since the commencement of the war, there had been an extraordinary record of good health among the people, in great measure due to sanitary vigilance and intrepidity.

The war had brought home both to our soldiers and to our civil population the vast importance of public health. Our legislators had never paid so much attention as now to questions pertaining to hygiene. The Ministry of Health had not yet arrived, but the *Maternity and Infant Welfare Act* had been placed on the Statute Book. In conclusion, Sir James said:—

> It is the terrible loss of our best human stuff that we have sustained in the war that has riveted the thoughts of our people on health questions. The loss is obvious. No one with an eye to see can walk along the streets of our big towns or attend any public assembly without observing the great preponderance of the female sex. Our bold boys and strong men "of pith and puissance" have gone in hosts to the front, and a multitude of them are sepultured there, while of those who came back, many will be maimed and disabled or seeded for death. How are the gaps to be filled up so that we may hold our own in the world? Only by the increased prolificness of our people, or by the preservation of lives that have hitherto been allowed to lapse. The fall in the birth-rate must be arrested, or infant mortality must be reduced. The fall in the birth-rate is mainly an ethical and social question, and only indirectly connected with sanitary considerations, and although neo-Malthusianism seems to have been interned for the present, it is not to be expected that we shall derive from an increased birth-rate any speedy compensation for our war wastage. But infant mortality is essentially a sanitary concern, and it is in a reduction in it that the public has fixed its hopes in relation to the maintenance of our national strength and integrity.
>
> I need not tell you of the decline in that rate that has taken place in recent years. In 1895, 151 of every thousand babies born in England and Wales failed to reach the goal of a first birthday anniversary; in 1915 only 110 of the thousand fell out by the way, while in 1905 only 95 were defaulters. But 95 per 1,000, although the lowest rate of infant mortality yet reached in this country as a whole, is by no means the lowest possible. The trend has been downwards, although not quite steadily so, and everything indicates that the inevitable irreducible infant mortality rate need not exceed 50.
>
> Lord Rhondda was, therefore, quite justified in saying that we can save the lives of 1,000 infants weekly, and ought to do so, thus making good our war losses and securing our national prosperity in the industrial warfare of the time to come. But the momentous question is: How are we to do this? And the popular answer to that question at the moment would almost certainly be by an extension of social work for the welfare of mothers and infants.

Correspondence.

THE EFFICIENCY OF MEDICAL PRACTITIONERS.

Sir,—In reading the *Journal* lately I have received two rude (*sic*) shocks. In the issue of February 22 Dr. J. Leon Jona tells me that I "go on with methods that modern medicine teaches us are wrong" and that I "ignore the most urgent teachings of modern medicine and surgery." Do I? And now, in the issue of March 8, Dr. Richard Jones tells me that in Sir William Osler's opinion I am "in such depths of ignorance as to be hopeless." Rather severe this. Of course, I have obtained my registration quite long enough (33 years) to have acquired some humility, but I really thought I was not doing too badly compared to the results of other men, isolated as I am.

Gentlemen, do you solemnly believe that the isolated man has no knowledge of what is going on in the medical world. Do I not read my journals? Am I not swamped with literature from the manufacturing houses? Does not the book canvasser want to flatten me out with ponderous tomes? and when I tell him I have not time to read them, replies with what he calls "two minute books"?

Do I not use, with an enquiring mind, serums and vaccines? What more do you expect? If we are isolated, help us by publishing your results; we have not time to come and see you.

Dr. R. Hamilton Russell, Melbourne, helped me and a patient of mine a few years ago by publishing his paper on "Fractures of the Lower Extremity." A young fellow broke his thigh and was three days getting to me. I slung him up according to Dr. Russell's directions and turned him out perfect as regards measurement, palpation and inspection (I have no X-ray) and he subsequently won the hundred yards race of his class. The moral of this story is obvious. If I were the fossil I am apparently expected to be I suppose I should have put him on the long side splint of the 'eighties and turned him out with a limp and a thick femur three-quarters of an inch short.

No, gentlemen, we are not all fossilized yet.

Yours, etc.,

"THE OLD BUSH-DOCTOR."

March 10, 1919.

Books Received.

THE ORGANS OF INTERNAL SECRETION, THEIR DISEASES AND THERAPEUTIC APPLICATION: A BOOK FOR GENERAL PRACTITIONERS, by Ivo Geikie Cobb, M.D., M.R.C.S.; 1918. London: Baillière, Tindall & Cox; Crown 8vo., pp. 274. Price, 7s. 6d. net.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; Third Series, Volume Thirty-nine; 1917. Philadelphia: Printed for the College; pp. 518.

The following have been nominated for election as members of the New South Wales Branch of the British Medical Association:—

Howard Kynaston Denham, Esq., M.B., Ch.M. (1915, Univ. Sydney), Grosvenor Crescent, Summer Hill.

Arthur Duncan Forbes, Esq., M.B. (1913, Univ. Sydney), Bank of Queensland, Ltd., George Street, Sydney.

Cyril Charles Minty, Esq., M.B. (1915, Univ. Sydney), 455 Miller Street, North Sydney.

Albert Arscott Pain, Esq., M.B., Ch.M. (1918, Univ. Sydney), Chapel Street, Marrickville.

The following have been elected members of the Victorian Branch of the British Medical Association:—

Henry McLorinan, Esq., M.B., Ch.B. (1918, Univ. Melb.), Williams Road, Toorak.

Walter McRae Russell, Esq., M.B., Ch.B. (1918, Univ. Melb.), 24 Howard Street, Kew.

William Dixon Saltau, Esq., M.B., Ch.B. (1918, Univ. Melb.), Melbourne Hospital.

Charles William Berry Littlejohn, Esq., M.B., Ch.B., Univ. Oxford, 1914; M.R.C.S., Eng., L.R.C.P., Lond., F.R.C.S., Eng., 1916, East Melbourne.

David Leslie Yoffa, Esq., M.B., Ch.B. (1918, Univ. Melb.), Melbourne Hospital.

Benjamin Banko Armstrong, Esq., M.B., Ch.B. (1918, Univ. Melb.), Women's Hospital, Melbourne.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALLES.

The following have been registered under the provisions of the *Medical Act, 1912 and 1915*, as duly qualified medical practitioners:—

Herbert Percival Brownell, M.B., Bac. Surg., 1915, Univ. Melbourne.

George Seaborne Robinson, M.B., Bac. Surg., 1914, Univ. Melbourne.

Cyril Charles Minty, M.B., 1915, Univ. Sydney.

Bernard Hilliard Simon, M.B., Bac. Surg., 1916, Univ. Edin.

Arthur Madgwick Davidson, M.B., Mast. Surg., 1915, Univ. Sydney.

VICTORIA.

The following have been registered, under the provisions of Part I. of the *Medical Act, 1915*, as duly qualified medical practitioners:—

Charles William Berry Littlejohn, M.B. *et* Ch.B., Oxford, 1914; M.R.C.S., Eng., L.R.C.P., Lond., F.R.C.S., Eng., 1916; Scotch College, East Melbourne.

Donald Clemow Nance, M.B. *et* Ch.B., Melb., 1918; 5 Princes Street, St. Kilda.

William James Penfold, M.B. *et* Ch.M., Edin., 1896; D.P.H., B.Hy., Durban, 1908; M.R.C.S., Eng., L.R.C.P., Lond., 1909; Commonwealth Serum Laboratories, Royal Park.

SOUTH AUSTRALIA.

The undermentioned have been registered, under the provisions of the *Medical Act, 1880*, as duly qualified medical practitioners:—

Harry Roy Pomroy, M.B., B.S., Adel., 1918.

William Kendall Collins, M.B., B.S., Adel., 1918.

Medical Appointments.

Dr. Isaac Silverman (B.M.A.) has been appointed Public Vaccinator for the Metropolitan District, Victoria.

Dr. Oliver K. Hartridge (B.M.A.) has been appointed Officer of Health for the Borough of Port Fairy and for the Shire of Belfast, Victoria.

The appointment of Dr. H. V. Bennett (B.M.A.) as Acting Officer of Health for the Shire of Bulu Bulu and of Dr. David Kerr as Officer of Health for the Corryong and Walwa portions of the Shire of Towong, Victoria, is announced.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xiii.

Department of Public Instruction, New South Wales: Four Medical Officers (two male and two female).

Hospital for Sick Children, Brisbane: Third Resident Medical Officer.

Infectious Diseases Hospital, Fairfield: Resident Bacteriologist and Registrar.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec. 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. New South Wales Ambulance and Transport Brigade. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Mar. 25.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
Mar. 26.—Vic. Branch, B.M.A., Council.
Mar. 27.—S.A. Branch, B.M.A.
Mar. 27.—N.S.W. Branch, B.M.A., return of ballot papers for election of members of the Council.
Mar. 28.—N.S.W. Branch, B.M.A., Annual Meeting.
Mar. 28.—Q. Branch, B.M.A., Council.
Apr. 1.—N.S.W. Branch, B.M.A., Council (Election of Officers and appointment of Standing Committees).
Apr. 1.—Tas. Branch, B.M.A., Council and Branch.
Apr. 2.—Vic. Branch, B.M.A.
Apr. 4.—Q. Branch, B.M.A.
Apr. 8.—N.S.W. Branch, B.M.A., Council (Quarterly).
Apr. 10.—Vic. Branch, B.M.A., Council.
Apr. 11.—Q. Branch, B.M.A., Council.
Apr. 11.—S. Aust. Branch, B.M.A., Council.
Apr. 11.—N.S.W. Branch, B.M.A., Clinical.
Apr. 15.—Tas. Branch, B.M.A., Council.

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